

NOVEMBER  
1910

# MOTOR BOATING

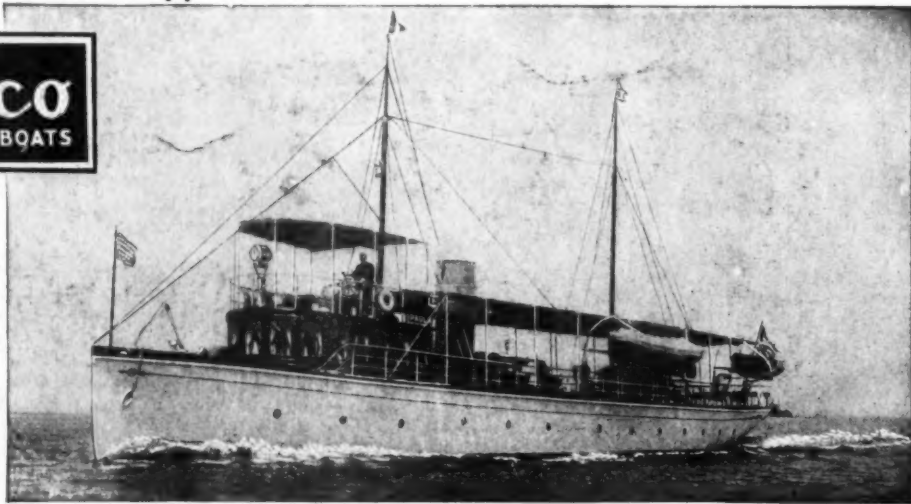
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(Signed) ALBERT E. SMITH.

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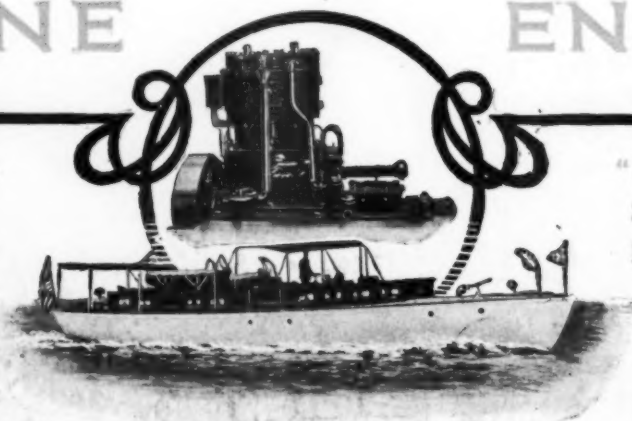
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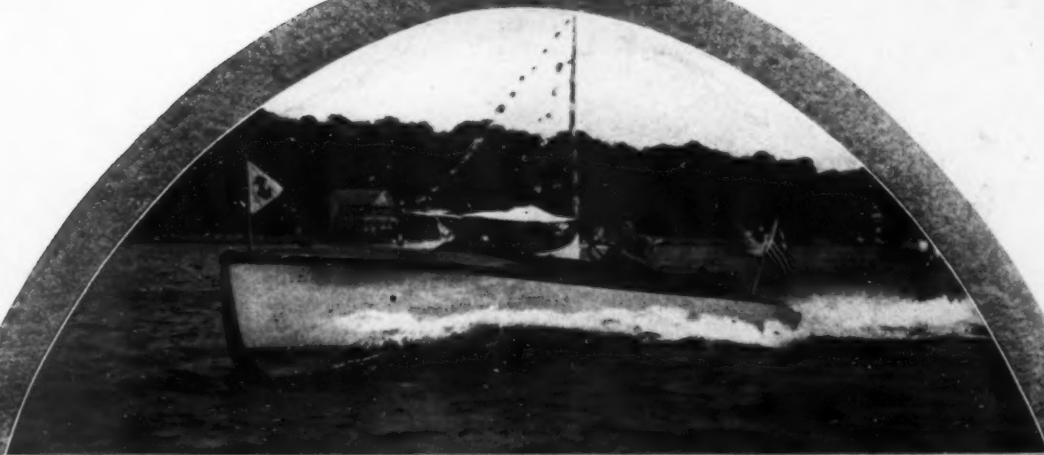
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November, 1910.

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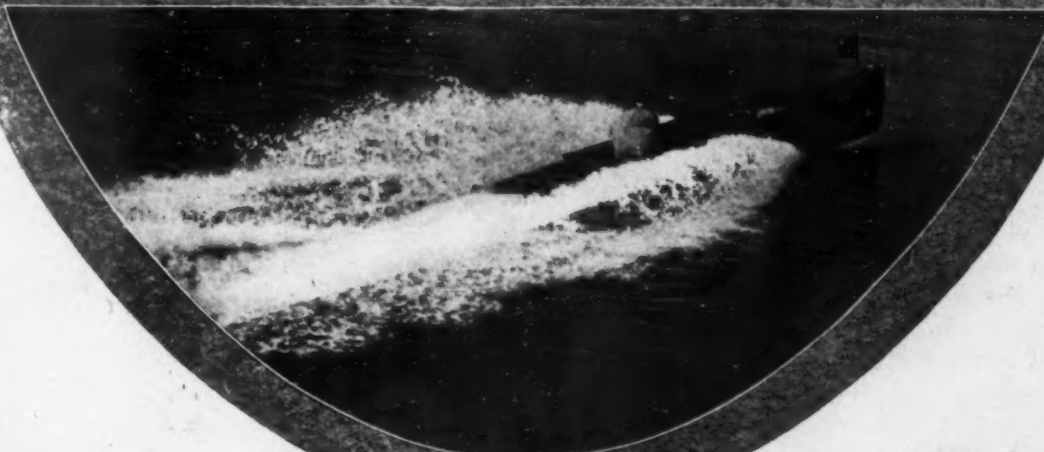
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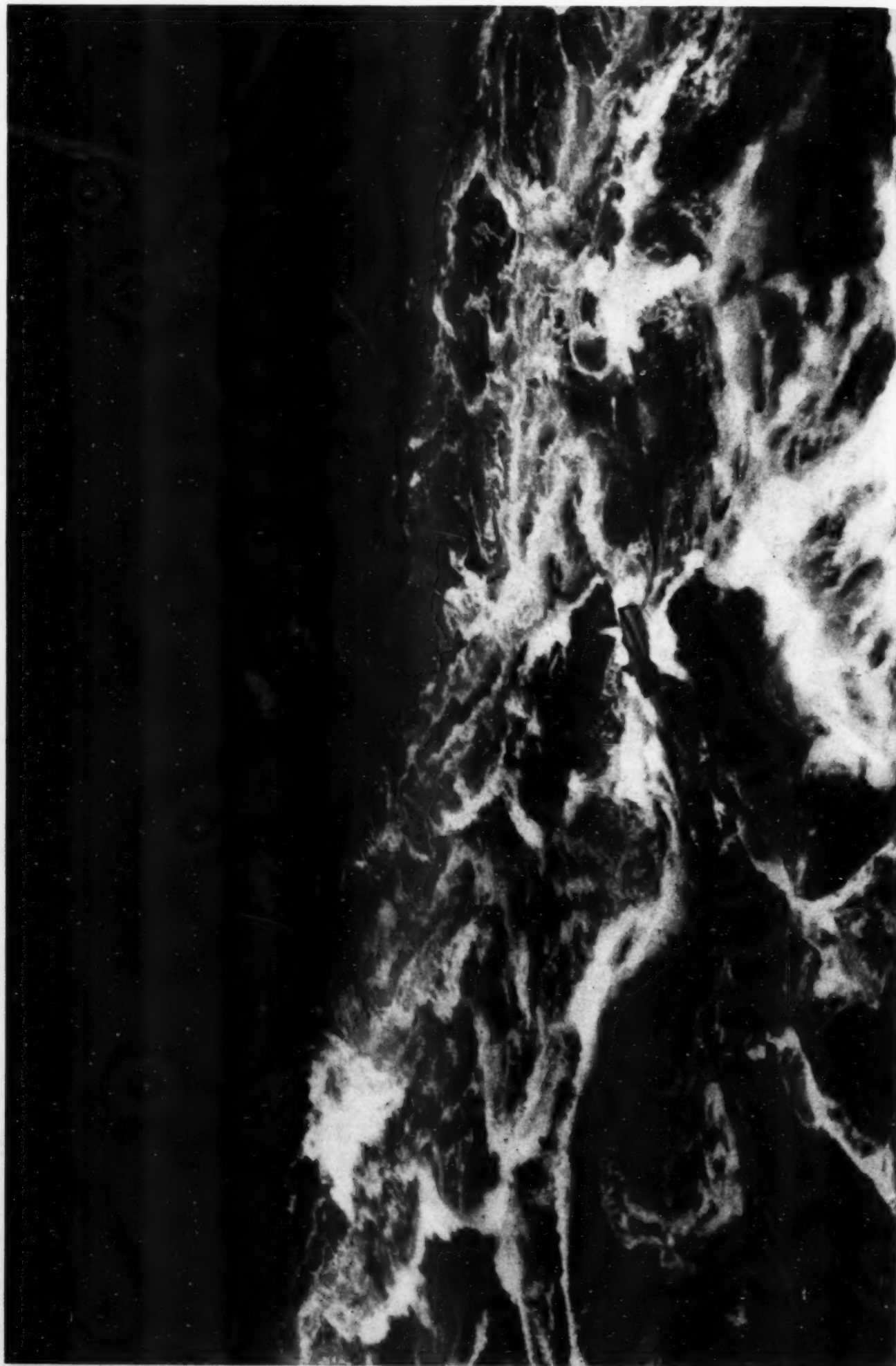
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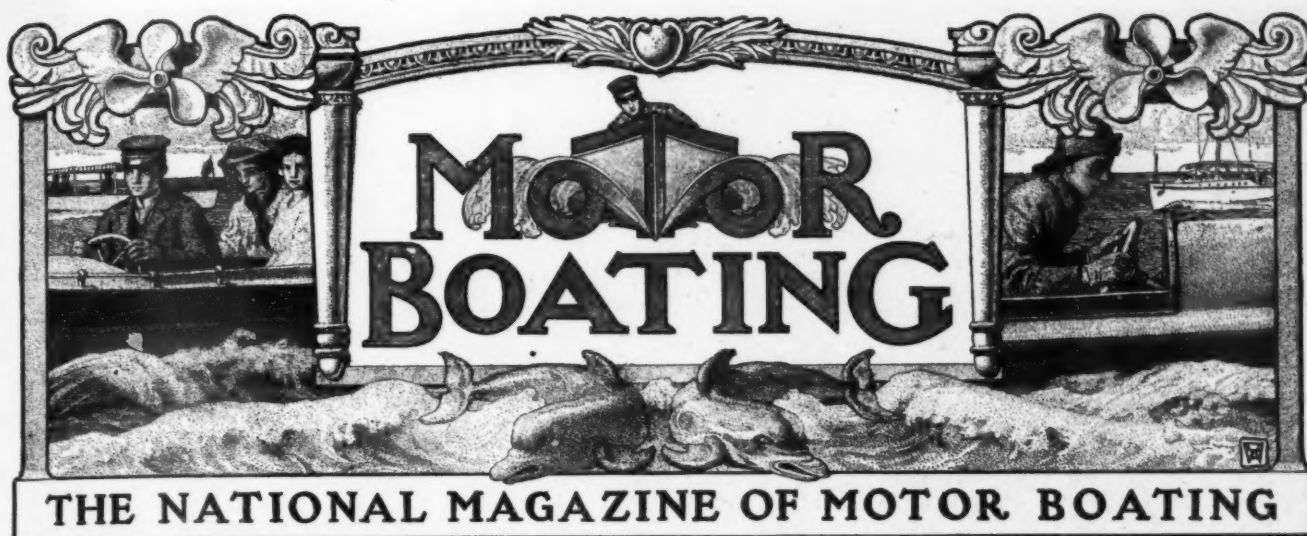


Photograph Copyright by Geo. J. Hare.

**Through the Whirlpool Rapids in a motor boat.**

This remarkable photograph of a remarkable feat was taken by Mr. George J. Hare on September 18th, when Captain Klaus Larsen drove his eighteen-foot motor boat, *Ferro*, through the famous Whirlpool Rapids below Niagara Falls.





## The National Motor Boat Carnival.

Sixth Annual Event of the Manufacturers' Association Held Under the Auspices of the M.B.C.A.  
An Otherwise Successful Event Marred by the Presence of Floating Debris.

By Gerald T. White.

Photographs by Levick.

**T**HE sixth annual motor boat carnival of the National Association of Engine and Boat Manufacturers of America was held on the Hudson River off 158th Street, September 21st to 24th inclusive.

Although ideal weather was the rule for the entire four days, it cannot be said that ideal conditions for racing high speed boats were had, for floating refuse practically ruined what might otherwise have been the most successful carnival ever held. There has always been more or less trouble experienced by the speed boat operators on account of logs and other obstructions floating in the river, but this year the conditions were so bad that it was a case of pure luck for a boat to go over the course without being damaged by half submerged drift. Every boat owner or operator who went over the course complained of the drift, and many of the boats had to put in several new wheels to replace those damaged. One speed boat in particular, *It*, had four new wheels and shafts put in place.

The entry list was the largest ever received for a carnival, nearly fifty owners signifying their intention of entering. Our old friend *Dixie II* was missing as Mr. Burnham her owner has decided to withdraw the famous old boat from active racing. The 12 metre speed class was filled, however, by *Nameless*, the thirty-two cylinder creation designed and built to defend the Harmsworth Trophy, and *Restless*, a sixteen-cylinder boat, built for the same purpose. *Tartar*, a new Seabury 60-footer, and the old *X P D N C* were also high speeders, but they raced in a separate class, as both are over 12 metres long.

The first day was devoted to the two long distance events, one for speed boats to Poughkeepsie and return, and the other for cruising boats to Peekskill and return. The weather was perfect, and at 9:30 the preparatory gun was fired from the committee house boat *Najme*, anchored off 158th Street, five minutes later the speed boats started and a very pretty sight it was, as the nine boats went across the line so close together that the wings of spray would often be thrown from one boat into the cockpit of another. *Ibis*, the tenth starter, got off over a minute late and soon abandoned the race. Before the boats were out of sight it could be seen that *Peter Pan III* was slowly drawing away from the bunch, and the wise ones in the crowd on the *Najme* predicted a new record for the course. At 9:40 the two cruising classes started, and some lively work was done by the wheelmen in order to prevent fouling as the fifteen boats went over. *Edmee* and *Avis* soon showed that they were the fastest in their division.

After the boats were all out of sight the majority of the committee went ashore after promising to return before 2 o'clock, as it wasn't deemed possible for any of the boats to finish before 2:30. Luckily the committee all returned a bit

early, for at 2 o'clock two boats were seen coming down the river near Fort Washington Point. They were soon made out to be *Edmee* and *Avis*, both crowding on all the power they had as they were practically bow and bow. *Avis*, however, had enough reserve power to spurt at the finish and crossed five seconds ahead of *Edmee*. It was one of the most remarkable finishes considering the size of the boats and the length of the course ever seen on the Hudson.

*Peter Pan III*, driven by her owner James Simpson, was the first boat to finish in the speed class with an average speed for the entire 115 miles of 24.6 miles per hour. This breaks the record for the course, which was formally held by *X P D N C*. *Rapier*, a long low craft with a small mahogany cabin aft that was designed and built by A. E. Luders, did not finish as she was disabled on her northerly trip. *It*, *Ibis*, *Red Raven* and *Gunfire II*, last year's winner, were all disabled. *It* ran over the sunken dock at Fishkill and broke her shaft and propeller. She was towed to Newburgh, where she was hauled out and a new shaft and wheel put in. It was too late to continue in the race after these repairs had been made, so she slowly returned to New York to compete in the series events. Although *Peter Pan* had made a new record, she dropped to second place in favor of *Edith II* on corrected time.

The second day of the carnival was given up to the first of the series events for the five Championship Trophies, given by the National Association of Engine and Boat Builders, and the two special trophies, given by the same association.

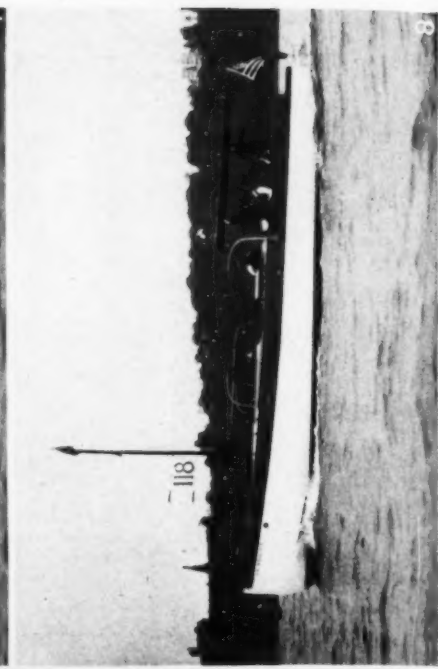
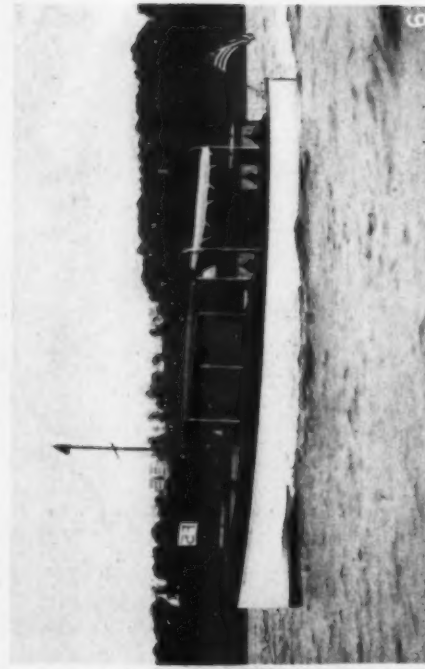
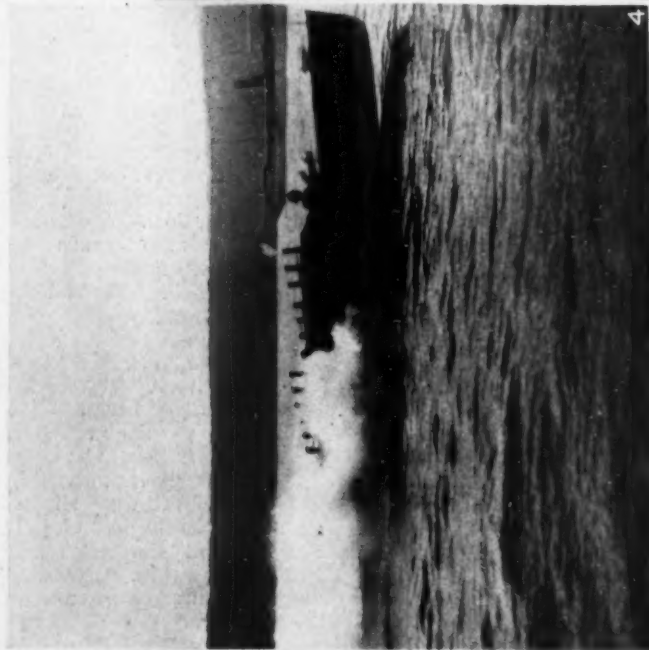
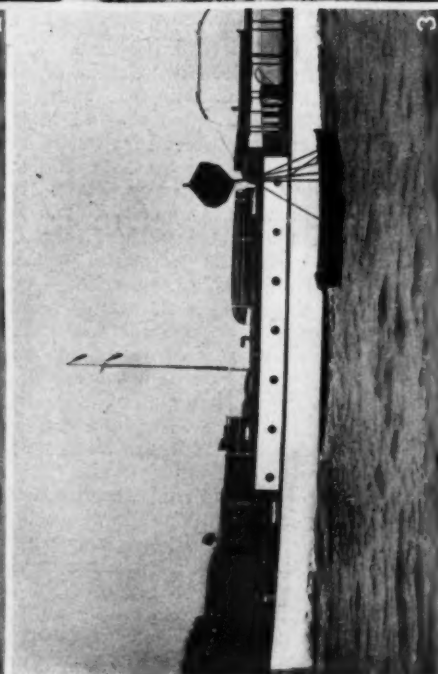
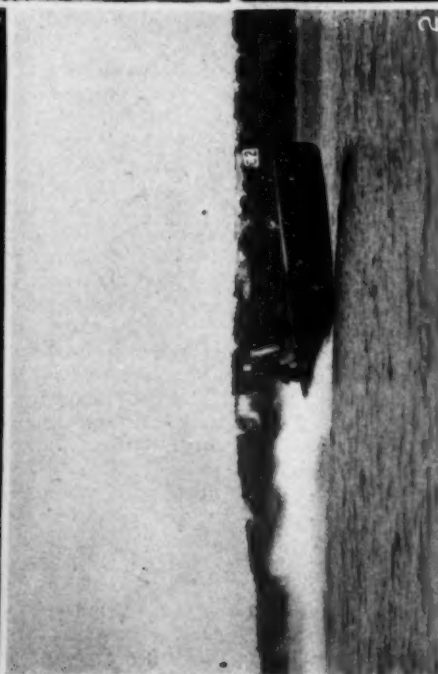
The series races were to be run under a point system, a point to go to a boat's credit for every boat she defeated, also one point as a premium for finishing the race.

The first class to start was Class B for high speed boats of over 40 feet over all. *Tartar*, a new 420 horse power speeder, ran away from the other two in this class, although on time allowance *X P D N C* was only a minute behind her, *Rapier* caught fire at the lower mark and her crew were rescued by a tug. *Rapier* was so badly damaged that she was permanently withdrawn.

*Restless* and *Nameless* were the only two to start in Class C. *Restless* got off alone, and *Nameless* didn't start until 14 minutes after the gun; she hit up a terrific pace, however, and made the best time she has ever shown. *Restless* had trouble as she broke a gasoline pipe in the fifth round and then, when that had been repaired, a seam opened up and kept all hands bailing. *Restless*, however, got going again in time to beat *Nameless* by thirteen seconds.

The Class A race for the Interstate Trophy brought out the biggest field of the day, as nine boats started. The start was good, but just as the gun was fired for the small boats, the 60-footer *Tartar* came rushing across the line, having finished her first round at a rate of 30 miles an hour. Her wash

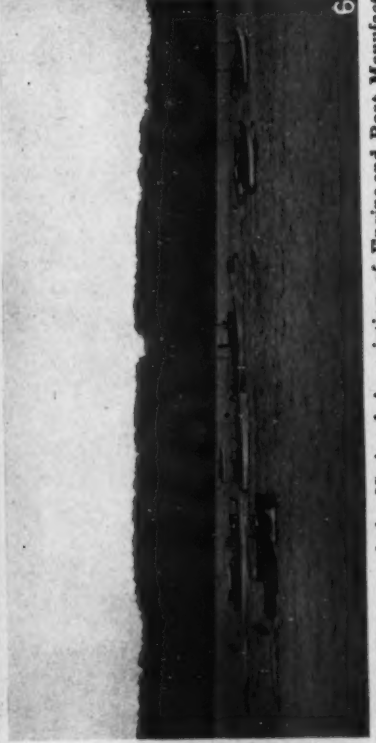
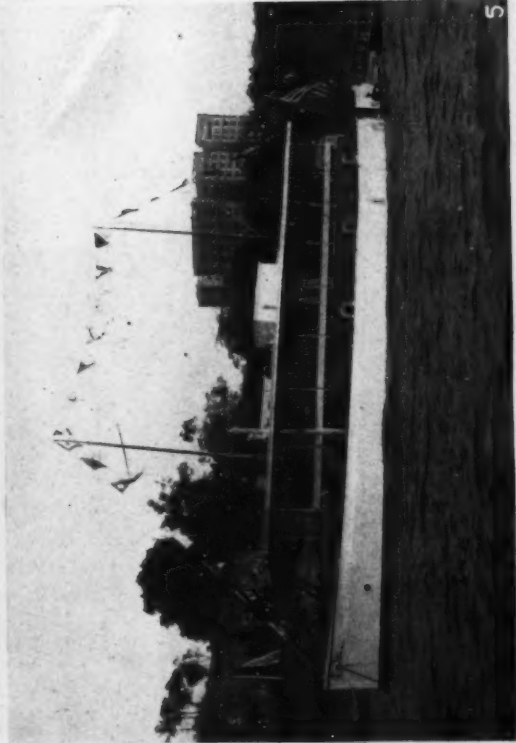
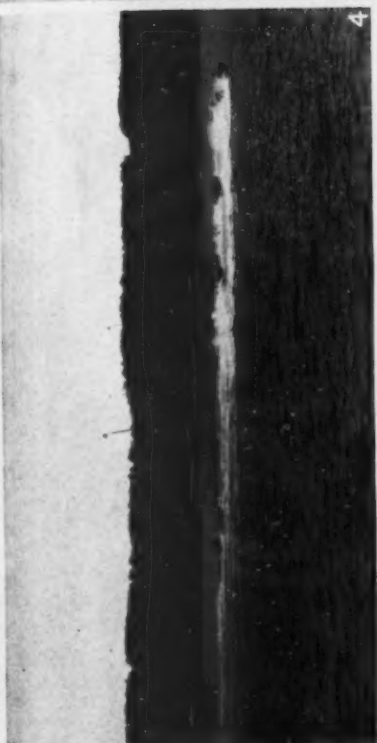




# The Annual Regatta of the National Association of Engine and Boat Manufacturers.

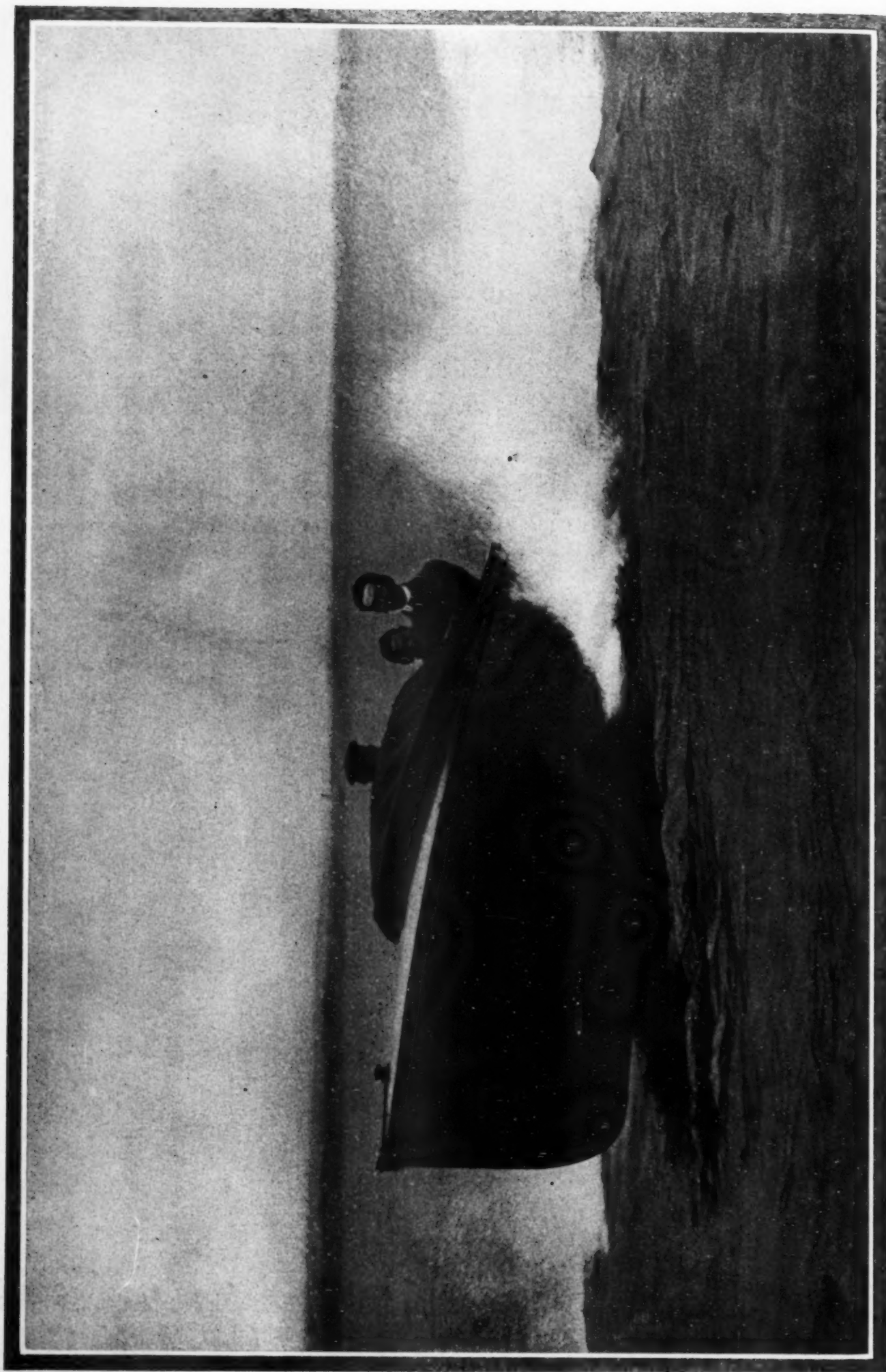
1. A somewhat foreshortened view of Tartar with Charles L. Seabury, her designer, at the wheel. 2. Nameless at Fort Washington Point after her accident. 3. Nameless with engines aggregating 32 cylinders and driving quadruple screws. 4. Nameless at full speed. 5. Nameless at full speed, showing a large wake. 6. Nameless at full speed, showing a large wake. 7. Nameless at full speed, showing a large wake. 8. Nameless at full speed, showing a large wake. 9. Nameless at full speed, showing a large wake. 10. Nameless at full speed, showing a large wake.

1. A somewhat foreshortened view of Tartar with Charles L. Seabury, her designer, at the wheel, a cruiser of unique design and a consistent performer. 2. Sand Burr, a Jersey Coast flyer that was wrecked by the drift. 3. Spinning, driving quadruple screws. 4. Keweenaw, a cruiser of unique design and a consistent performer. 5. House Boat Najac, chartered by the Motor Boat Club of America as a Regatta Boat. 6. Start of the long distance record for speed boats, to Poughkeepsie and return. 7. Vin, rounding the upper mark. 8. Traver, formerly Emerson, of Peoria fame. 9. Edith II, winner of the Interstate Trophy.



The Annual Regatta of the National Association of Engine and Boat Manufacturers.  
1. Petite, fastest time in the open-boat class. 2. Peter Pan III, holder of the long distance record for speed boats, to Poughkeepsie and return. 3. X P D N C, a seasoned racer. 4. Start of class A. 5. House Boat Najac, chartered by the Motor Boat Club of America as a Regatta Boat. 6. Start of the long distance record for speed boats, to Poughkeepsie and return. 7. Vin, rounding the upper mark. 8. Traver, formerly Emerson, of Peoria fame. 9. Edith II, winner of the Interstate Trophy.

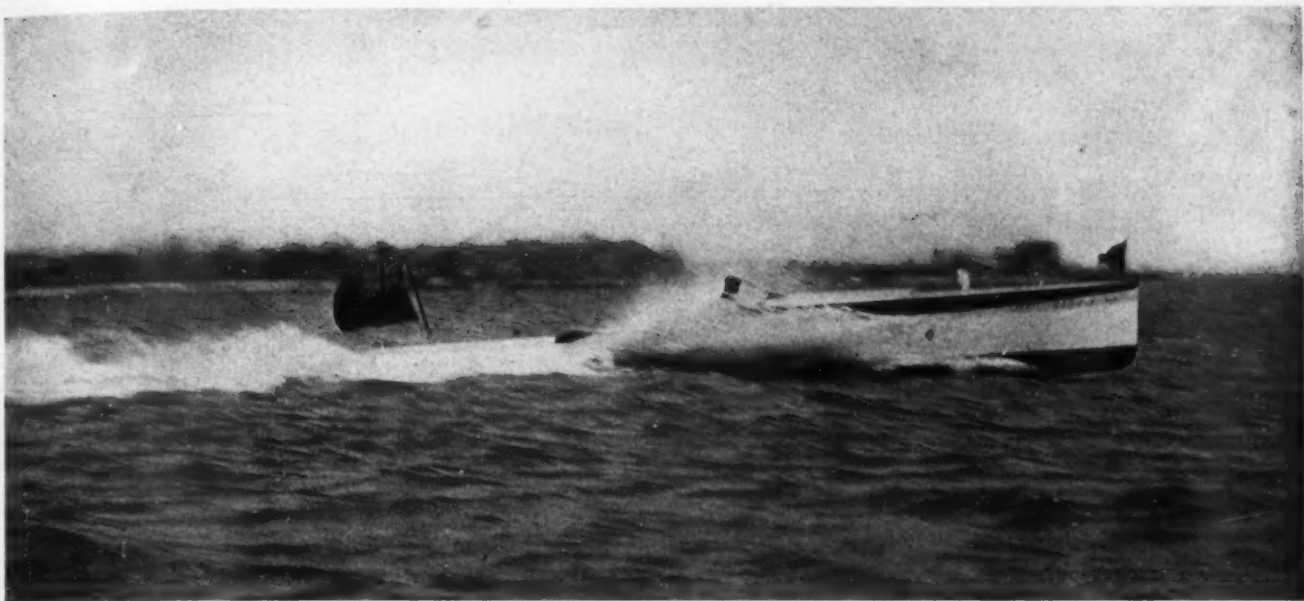




**Columbine at thirty knots.**

In this striking photograph, the first of her series of steps is clear of the water and can be seen plainly. Columbine is an eight-metre Saunders-Fauser hydroplane equipped with a 60-horse power Wolseley motor, which has driven her at the rate of 32½ knots. (See page 46.)





Baby V, a thirty-five-foot displacement boat of one hundred horse power, maintained a speed of about twenty-nine miles per hour.

## The British Sea Mile Contest.

Miranda IV and Baby V the Only Speed Boats to Compete in the Fifth Annual Contest.  
How the Thornycroft Boat, in a Subsequent Trial, Exceeded her Record.

**O**WING to the absence of Pioneer, the fifth annual Sea Mile Record Contest was robbed of much of its interest, as there has been a great deal of speculation on the actual speed of this boat, and many looked forward to this event for its determination. As it was generally supposed that she would be entered, a number of fast boats were withheld and the field was left clear for Baby V and Miranda IV.

The course was over the measured sea mile at Southampton, and consisted of three runs with and three runs against the tide, the mean time being taken for the speed. Miranda IV won the \$300 trophy at a mean speed of 29.902 knots, and the claim that Mr. Tom Thornycroft, who drove her, did not let her out, seems to be well established by her subsequent performance.

Baby V, a 35-foot displacement boat, equipped with a 150 h. p. motor, showed an excellent performance as far as regularity is concerned, but averaged only 25.133 knots.

The first race of this series was won in 1906 by Yarrow-

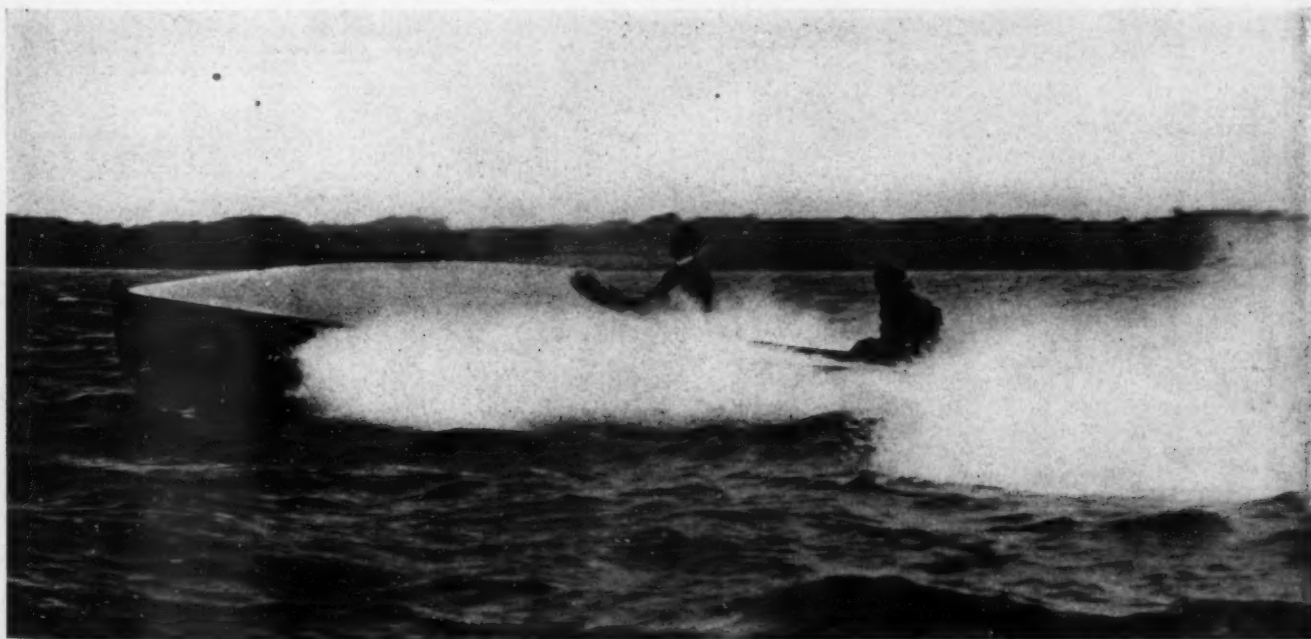
Napier at a speed of 23.983 knots. In 1907 the cup went to Daimler II, her speed being 25.720, and the same boat won it the following year when her speed was 26.446 knots. In 1909 Baby V was the winner with 23.371 knots.

Three days after the Sea Mile Record Contest, Miranda IV was given another trial of 6 runs with and against the tide over the same course and was officially timed by the Motor Yacht Club and Messrs. Thornycroft. Her performance was as follows:

With the tide 36.59 sea miles, or 42.5 land miles; against the tide 32.90 sea miles, or 38 miles; with the tide 37.03 sea miles, or 43 miles; against the tide 34.29 sea miles, or 39.5 miles; with the tide 37.89 sea miles, or 43.5 miles; against the tide 34.81 sea miles or 39.5 miles.

It is evident, therefore, that she is considerably faster than her Sea Mile record would indicate.

Another boat of the past season which has attracted considerable attention is Columbine, shown on opposite page.



Miranda IV, the twenty-six-foot Thornycroft hydroplane, winning the British Sea Mile Contest at a speed of about thirty-four miles per hour.



The 20-foot Viper, equipped with a fifteen horse-power motor, constructed under the writer's supervision.

## How To Build a Viper.

Instructions, Working Drawings, List of Materials, Table of Dimensions for Building a 20-Footer.  
A High-Speed Motor Boat of the Simplest Possible Construction.

By Henry Douglas Bacon.

Member of the Society of Naval Architects and Marine Engineers.

[Few types of boats have created the interest and discussion that have been aroused by this little speeder. The speeds attained with small engines are almost phenomenal, and many experiments with this type of boat have lately been made with the result that the viper type bids fair to become as widely known as did the sailing scows of a few years ago. The boat is really a stepless hydroplane, employing the principle of sliding over rather than cutting through the water, and its construction is so simple and inexpensive that it should appeal particularly to the amateur builder. Mr. Bacon, a designer and builder of well-known ability and large experience, has experimented widely with this simple but practical and extremely interesting type and, probably, is in a better position than anyone else in the country to tell how such a boat should be built. We are fortunate, therefore, in being able to obtain from him such an article for the readers of *MoToR BoatinG*.—EDITOR.]

**I**T is hardly necessary to state that any type of hull to accommodate properly different horsepowers must of necessity be constructed to suit such horsepowers, and the Viper is no exception to this rule.

In the 20-foot Viper the horsepowers run from eight to about forty with corresponding variation in the weight of the engine. The construction given herewith is for a hull to accommodate a 20 h.p. engine up to about 450 lbs. weight with complete outfit. In lesser powers the scantling can be reduced, and in greater powers it will be necessary to increase the weight of the longitudinal members and in addition in the highest power, to run the engine girders farther forward and aft. See table.

Assuming that the builder has an ordinary kit of carpenter's tools, such as hammer, cross-cut and rip saw, chisel, screw-driver, square, chalk line, a few bitts and a bitt stock, a work bench of some description and a room something over 20 feet long, he is ready to commence the boat.

**Keel Base.**—As it will probably be cheaper and easier to get a number of short length rough 1 in. boards 8 in. or 9 in. wide, than the 2 in. plank, and this is the method that will be described.

After sawing the edges square place a number of them together, end to end, so as to get a length of 20 feet at least, making the top edge straight. On top of these place a

second line, letting their ends come at least two feet away from the ends of the first line.



The spray boards extend from stem to stern.

Fasten these two thicknesses of boards together securely with ordinary board nails or screws, taking care that along the top the nails are kept down sufficiently to miss the line of the keel (about 3 in. in the center). Lay off a base line by stretching a chalk line from end to end of this base board  $2\frac{3}{4}$  in. below the top (mark this line plainly so that the work can be checked after the base board is set up). Along this base line lay off stations 12 in. apart commencing at the right-hand, calling the first station or bow No. 0, the next will be No. 1, the next No. 2 and so on to No. 20, which will be the stern. At these stations set up heights toward the top of the board above the base line, the heights given in the table of offsets under the heading, "Bottom Above Base." For example, at No. 0 it gives  $2\frac{3}{4}$  in., therefore at No. 0 on the base board measure up  $2\frac{3}{4}$  in. and mark the point. At No. 1 it gives  $2\frac{1}{2}$  in., so at number one on the board measure up  $2\frac{1}{2}$  in. and mark this point. Do this for all the stations. When all the points are established, run the fairing batten through them by tacking a small nail lightly on each side of it at every other spot (do not force the batten if it will not lie easily on all the spots. Check your work to see that you have made no mistakes). It is not likely that all the spots come absolutely fair. Look along the batten and where it is not fair make it so by letting the batten go above the spot at one station and below it at



next so as to halve the error. You can't work closer than  $\frac{1}{8}$  in. Draw this line in and cut out the part above it. The base board is now ready to set up. Nail legs to either side of it, about four or five on each side. These can be put on in somewhat the same manner as the legs on a saw horse and can be made of any old material. When it is set up, however, it should be about level and the base line should be absolutely straight (test this with a chalk line). All the legs should be made to bear on the floor and should be fastened to it, and if necessary the base board should be otherwise braced to make it rigid. See sketch.

**Keel.**—The keel, if not easily procurable in one length, can be made in two pieces by putting an oak butt block on the inside. This block should be the same thickness and width as the keel and should extend between the floor timbers, the butt being made midway between. Each end of the keel should be fastened to the block with eight rivets or screws. Do not butt the keel so as to come under shaft log. See sketch.

The keel is 6 in. wide,  $\frac{3}{4}$  in. thick and 19 ft. 10 in. long; the tapers on the end can be cut after the grub is fitted. On each side of the keel there is a rabbitt  $\frac{1}{2}$  in. deep and  $\frac{3}{4}$  in. wide extending the whole length, gauge this off both ways and then, if there is no mill handy where this can be cut out on a circular saw in about ten minutes, cut it out with a chisel and smooth up. Transfer the stations from the base board to the keel and square across. A center line should also be placed fore and aft on the keel.

**Frames.**—All the frames can be gotten out from one mould, the only difference being in the length. Make a small template according to the drawing (the template can be made of thin wood, paper or cardboard) and mark off the frames on your lumber so as to use to best advantage, and saw out the frames. The frames are  $\frac{3}{4}$  in. thick. The height of frames should be marked on each one. This can be taken from the table under the heading, "Sheer Above Bottom." The frames should now be attached to the floors which we will assume have been got out, and which are described later on. An easy way to do this is to nail two pieces of wood on the floor or bench at right angles to each other, these pieces should be about two feet long and the inner edges straight. Place the frame inside this right angle so that the upper outside surface bears up against one of these pieces and the foot rests on the other, take the floor corresponding to the frame and lay it along the piece that the foot rests on, just so the end of it comes even with the heel of the frame and fasten them together. Fasten the frame to the other end of the floor in the same way.

The distance from outside to outside of frame at heads should be equal to the distance given in table under "Breadth of Frame at Head." Example, if you were laying off frame No. 10 the "breadth of floor" would be  $41\frac{1}{8}$  in. and the breadth of frame at head should be  $42\frac{3}{4}$  in.

The frame should be secured to the floor by three  $1\frac{1}{2}$  in. No. 12 galvanized screws or rivets, riveted over burrs, and about every second or third frame should be temporarily secured at heads from side to side by a stay lath.

**Floors.**—The floors are  $\frac{5}{8}$  in. thick and  $1\frac{1}{4}$  in. deep and are scored out at the center as per the drawing, so as to leave water way on each side of keel. Their center should be carefully marked and half their width placed

to  $\frac{1}{2}$  in. at top and is 6 in. parallel width. This member has the same sheer as the keel and keelson and it can be got in the same way, but as it is longer the sheer will have to be run out the extra length in a fair curve. The first thing is to put the sheer on the bottom and top and plane the edges fair, then gage the top edge to  $\frac{1}{2}$  in., and taper the piece as shown.

**Stem.**—Stem to be got out and shaped as shown in plan.

**Transom.**—Transom to be got from dimensions shown on plan which dimensions are for the after side, so that enough stock should be left on the sides and bottom to allow for the level about  $\frac{1}{4}$  in. The side cleats should also be given this same bevel. This can be made up of as many pieces as desired, but it is not best to try to make a tight joint of the seams, but to outgauge them and calk them.

You are now ready to assemble.

**Assembling.**—Before the keel is set up the stem and transom should be fastened in place with large screws from under side of the keel, a small knee or diagonal brace can also be fitted, but this is not necessary, except in higher powers.

The keel should now be stretched on the base board and secured to it with temporary screws, making sure the center line is straight (test with chalk line).

The frames are next set up in place. To do this put the center line of the floor on the center line of the keel, with the faying edge of the floor on the section line (by faying edge of the floor is meant the edge of the floor that comes against the frame, with the floors toward amidships and the frames away from amidships). That is in the forebody the frames are forward of the floors and in the after body the frames are aft of the floors. This is done so that one edge of the frames sticks out beyond the true line of side, so as to allow of its being beveled to fit up against the planking.

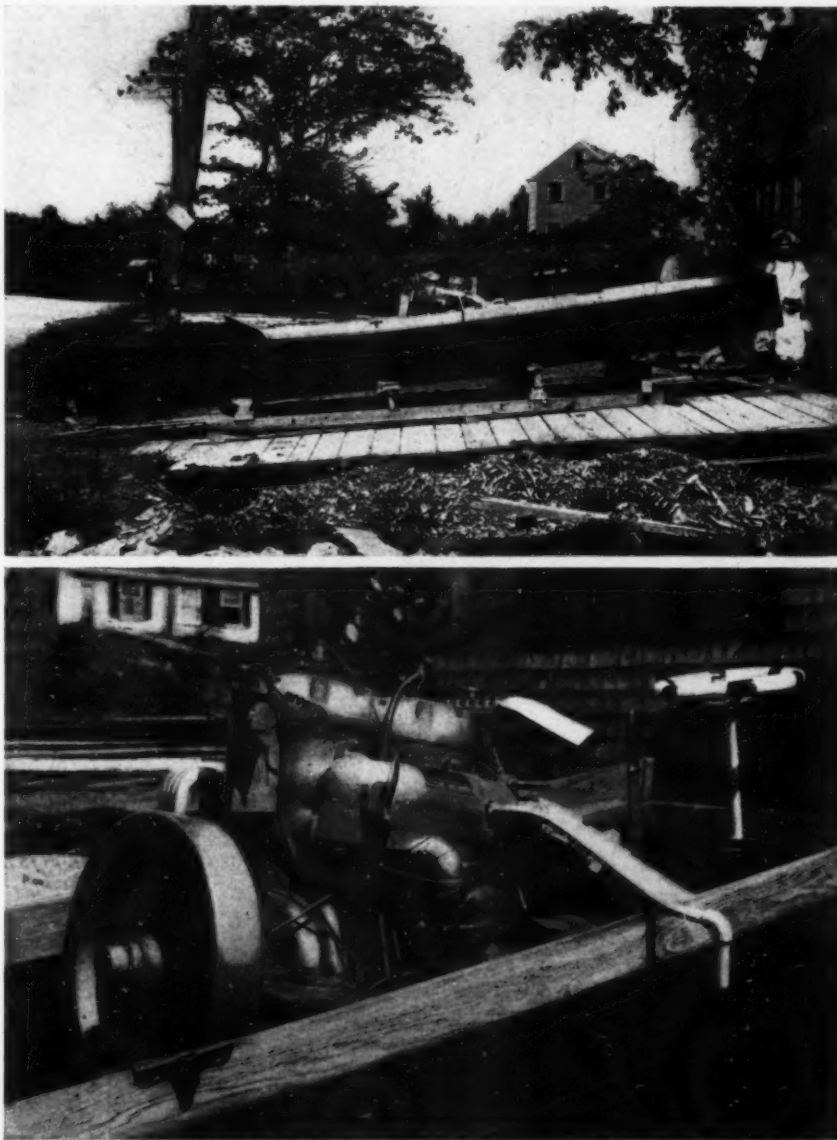
Fasten the floor to the keel with one nail

or screw at the center the fastenings in the keelson pass through the floors fastening them securely. See that frames are level thwartship and shore them from the floor at intervals.

The keelsons can now be put in place and their outer edge should be even with the inside edge of the rabbitt or  $4\frac{1}{2}$  in. from outside to outside, securely fastened by means of  $\frac{3}{16}$  in. rivets through floors and keel at every station. Holes should be bored for all rivets so as to be a good driving fit.

The stringers should next be put in place and fastened in the same manner. They had best be placed just outside the engine foundations and fastened to them. These should be made heavier in powers from 20 h.p. up.

The grub strake is now ready to be hung. (Text continued on third page following.)



The engine and shaft are installed at a somewhat greater angle than in ordinary practice.

on each side of it. This width is got from the table under the heading "Breadth of Floor." Great care should be taken to see that these are exactly to measurement.

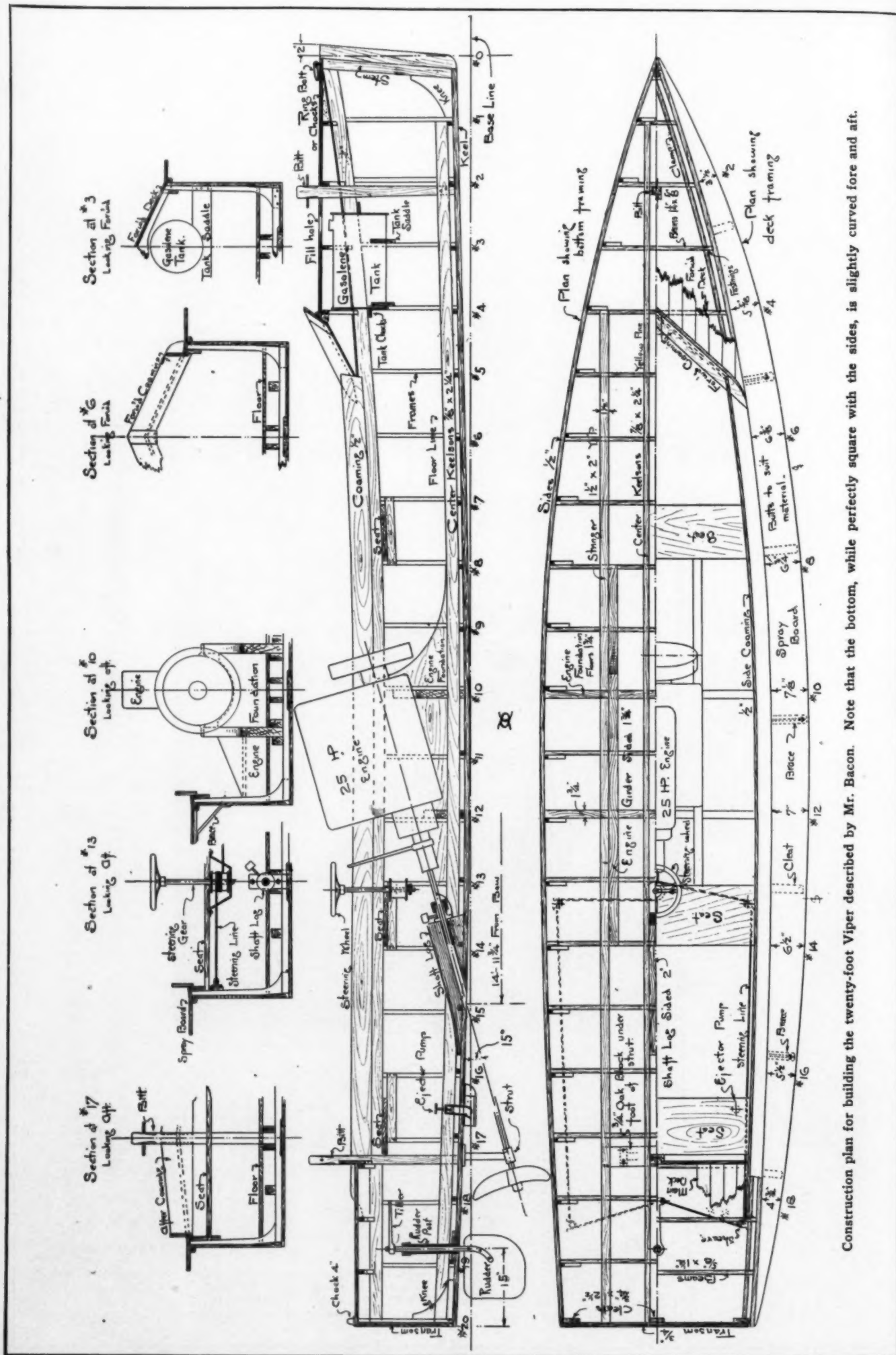
**Keelsons.**—The keelsons are  $\frac{3}{4}$  in. thick and when finished are  $2\frac{1}{4}$  in. deep. They have to be got out of stock  $2\frac{3}{4}$  in. wider, as there is this much sheer to the bottom. This sheer can be taken from the base board, as it is exactly the same, and the top should be parallel with the bottom; one length, if possible.

**Stringers.**—The stringers are  $1\frac{1}{2}$  x 2 in. and 19 ft. long.

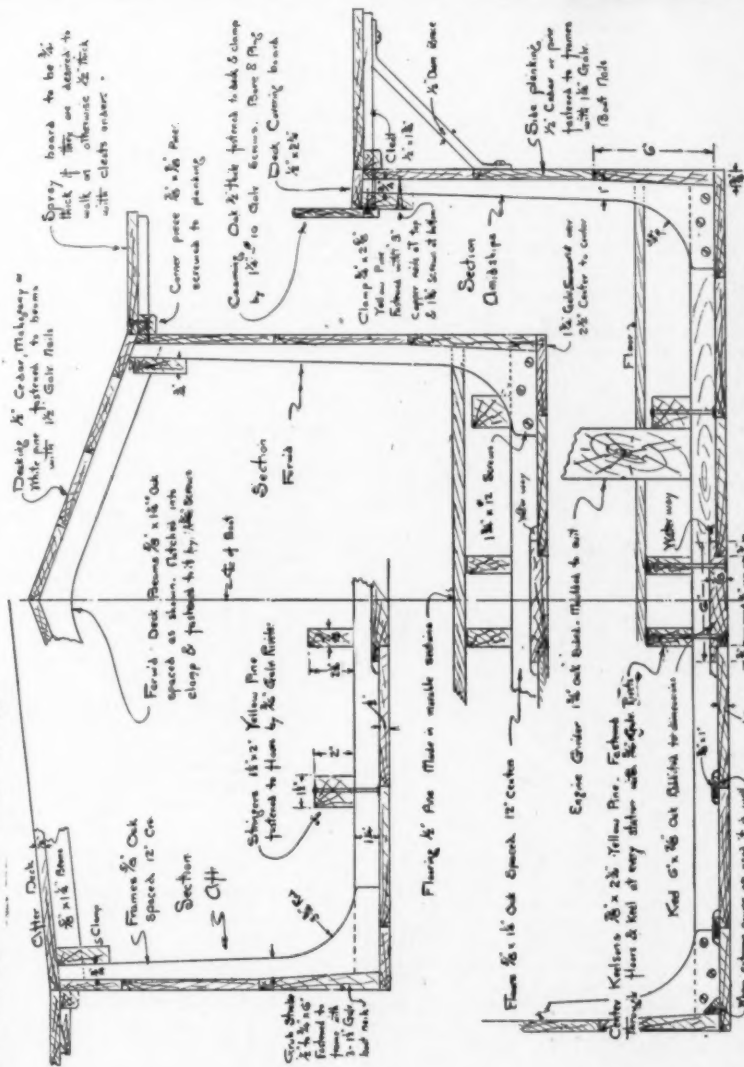
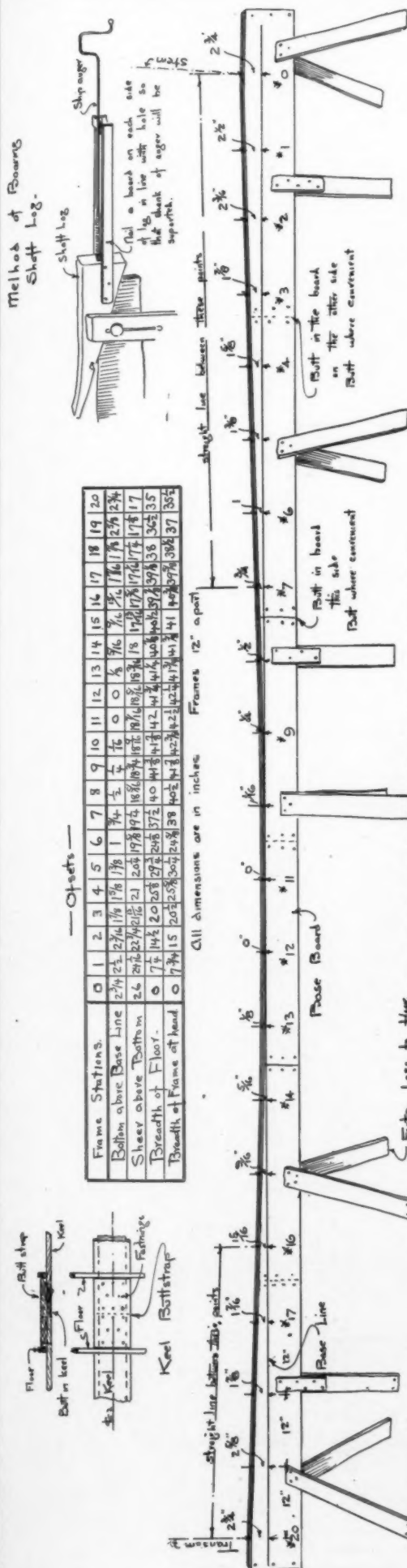
**Clamp.**—One length, if possible. The clamp is  $\frac{3}{4}$  in. thick and  $2\frac{3}{4}$  in. deep amidships and tapers to 2 in. at ends.

**Grub Strake.**—The grub strake is got out of  $\frac{3}{4}$  in. stock and when finished is tapered





Construction plan for building the twenty-foot Viper described by Mr. Bacon. Note that the bottom, while perfectly square with the sides, is slightly curved fore and aft.



### List of Material Necessary for Building Viper.

- FRAMES**—Two, 10 ft. long, 8 in. wide, 5/8 in. thick; of oak or elm. The width or length does not matter, as these small pieces can be worked out of anything.
- FLOORS**—One, 10 ft. long, 8 in. wide, 5/8 in. thick; of oak or elm. Same as frames.
- DECK BEAMS**—One, 5 ft. long, 10 in. wide, 5/8 in. thick; oak or elm. Same as frames.
- KEEL**—One, 19 ft. 3 in. long, 6 in. wide, 3/4 in. thick; oak or elm. This is best in one piece, but can be butted between frames. The butt to be made up on an oak butt block the width of the keel and run from floor to floor, fastened by at least 16 rivets or screws.
- KEELSONS**—Two, 19 ft. long, 5 in. wide, 3/4 in. thick; spruce or yellow pine. Should be cut to shape.
- STRINGERS**—Two, 16 ft. long, 2 in. wide, 1 1/2 in. thick; spruce or yellow pine. Bent in.
- GRUB OR BILGE STRAKE**—Two, 20 ft. 1 in. long, 8 3/4 in. wide, 3/4 in. thick; cedar, oak, white pine, cypress or mahogany. Should be cut to shape.
- CLAMP**—Two, 20 ft. long, 2 3/8 in. wide, 3/4 in. thick; spruce or yellow pine. Bent in.
- ENG. FOUND.**—Three, 6 ft. long, 7 in. wide, 1 3/4 in. thick; oak, elm, spruce. Cut to shape.
- BOTTOM PLANKING**—Two, 20 ft. long, 7 in. wide, 1/2 in. thick; two 18 ft. long, 7 in. wide, 3/4 in. thick; two 15 ft. long, 6 in. wide, 1/2 in. thick; cedar, white pine or cypress. Planks can be butted if reinforced by oak butt blocks securely riveted and 1/4 in. thicker than the strake. Also different width planks can be used to make up the total width.
- SIDE PLANKING**—Four, 20 ft. 3 in. long, 10 in. wide, 1/2 in. thick; cedar, white pine or cypress.
- SIDE COAMING**—Two, 13 ft. 6 in. long, 10 in. wide, 1/2 in. thick; oak, elm, mahogany, butternut.
- FORWARD COAMING**—One, 5 ft. long, 5 in. wide, 1/2 in. thick; oak, elm, mahogany, butternut.
- AFTER COAMING**—One, 3 ft. long, 7 in. wide, oak, elm, mahogany, butternut.
- DECKING**—Three, 16 ft. long, 4 in. wide, 3/8 in. thick; cedar, white pine, mahogany, butternut. Any width or length boards can be worked in to make up the above amount.

(Continued on following page.)



## Description of Construction.

(Continued from page 9.)

The lower edge of this should come even with the lower edge or foot of the frames. Fit the forward end neatly into the stem rabbitt with the outside edge slightly open for calking. Fasten to the stem and transom with screws and to the frames with ordinary galvanized screws, three fastenings to every frame.

Next get out and fit the side planking. To do this tack the plank up along the side of the boat with its lower edge slightly overlapping the top edge of the grub strake, run a pencil along the top edge of the grub strake marking a line on the plank, plane to this line and fit the plank. When the plank is properly fitted the inner edges should come tightly together so that no light will show between, and the outer edge will be about a full 1/16 in. open if the plank is made in two lengths, put an oak butt strap back of the butt about 3/8 in. thicker than the planking and 1/2 in. wider, and fasten the same as recommended for keel.

The upper end of this plank should be faired before fastening in place and if the plank is wider at one end than the other the wide end should be put forward. The next side plank should now be fitted, it should be put in place temporarily and the height of frames marked on the strake. It should then be taken down, a batten run through the points and faired, then planed to this line. It can then be fastened in place like the other. In fairing this top edge, allowance for the bevel of deck should be made on the inner edge. The fastenings to the frames should not be more than 2 1/2-3 in. apart and the nails or screws well set in for puttying. The clamp should now be fastened in place and should be placed high enough so that the upper edge will just come under the main deck, this is secured in place by 1/4 in. copper rivets, riveted over burrs in the top edge and galvanized screws in the lower edge. The tops of frames can now be sawed off even with the gunwale. Notch the beams into the clamps in the locations shown on plans and fasten with nails or screws from the top into the clamp.

Disconnect the boat from the base board and shoring and turn bottom side up. Plank the bottom the same as sides, but as the seams are all straight it will not be necessary to mark one plank from the other. All butts and seams should be made up in the same manner and it should also be fastened to the floors the same as the side planking was to the frames. While the boat is in this position it would be well to calk, plane and paint the bottom.

Turn the boat back and put on the decks. Put the piece that runs alongside the coaming

on first. This piece runs from the forward coaming back to the transom and will have to be cut to shape. Then start in the center and work out to it. If the deck is going to be left bright bore for your fastenings a hole half through the deck the size of the wood plug you will use, otherwise set the fastenings well in.

**Shaft Log.**—Shaft log to be got out to the dimensions given in plans and securely fastened to keel by eight 6 in. x 3/4 in. rivets (galv.), riveted over burrs. Care should be taken that a good fit is made between the keel and log and plenty of white lead put between before fastening. The boring of the shaft log is probably one of the most difficult things in the building of this boat, but by following the instructions given and the little sketch, there should be no trouble.

**Engine Foundation.**—The engine foundation will vary in shape with the size of engine but the same general arrangement as shown for the 25 h.p. can be used by merely shortening up and by moving the girders either in or out to accommodate the engine. Longitudinal and thwartship members should be well fastened together by bolts.

**Spray Boards.**—Spray boards to be got out from dimensions given or they may be cut off at the forward end back for about 6 ft. If these are desired to be walked on they should be 3/4 in., otherwise 1/2 in. is sufficient with battens under. About three braces hammered out of 1/2 in. iron fastened to cleats should be located on each side.

**Calking.**—These boats can be built without calking but it is not recommended. In calking use wicking which can be obtained at any ship chandler's and drive it well down, but be careful not to drive it clear through. Pay the seams with white lead, and after they are dry putty them. Before puttying, however, and after the boat has been calked, the hull should be well smoothed up and sanded down. It will require about three coats of paint to finish the boat properly and each coat should be allowed to dry well and should be lightly rubbed down with sand paper before putting on the next coat.

## The Materials and Their Sizes.

(Continued from page 11.)

**Spray Boards.**—One, 14 ft. long, 7 in. wide, 1/2 or 3/4 in. thick; cedar, white pine, mahogany, butternut. One 14 ft. long, 8 in. wide, 1/2 in. or 3/4 in.; one, 14 ft. long, 9 in. wide, 1/2 in. or 3/4 in. thick; cedar, white pine, mahogany, butternut. Butted in three places. Put butt blocks under butts.

**Stem.**—One, 2 ft. 3 in. wide, 2 in. thick; long, 5 in. oak, elm, hackmatack.

**Transom.**—One, 6 ft. long, 10 in. wide, 3/4 in. thick; oak or mahogany. Can be made of more than two pieces if desired.

**Flooring.**—Six, 14 ft. long, 6 in. wide, 5/8 in. thick; cedar, white or yellow pine, spruce, cypress. The width of these battens can be altered to suit the stock and nearly any kind of lumber can be used.

**Seats.**—One, 10 ft. long, 10 in. wide, 5/8 in. thick; cedar, white pine, mahogany, butternut.

**Shaft Log.**—One, 2 ft. 2 in. long, 8 in. wide, 3 in. thick; oak.

**Bits.**—One, 5 ft. long, 2 in. wide, 2 in. thick; oak or elm.

**Tank Saddles, Cleats, Etc.**—One, 6 ft. long, 6 in. wide, 3/8 in. thick; cedar, pine or spruce. Use any convenient length or width.

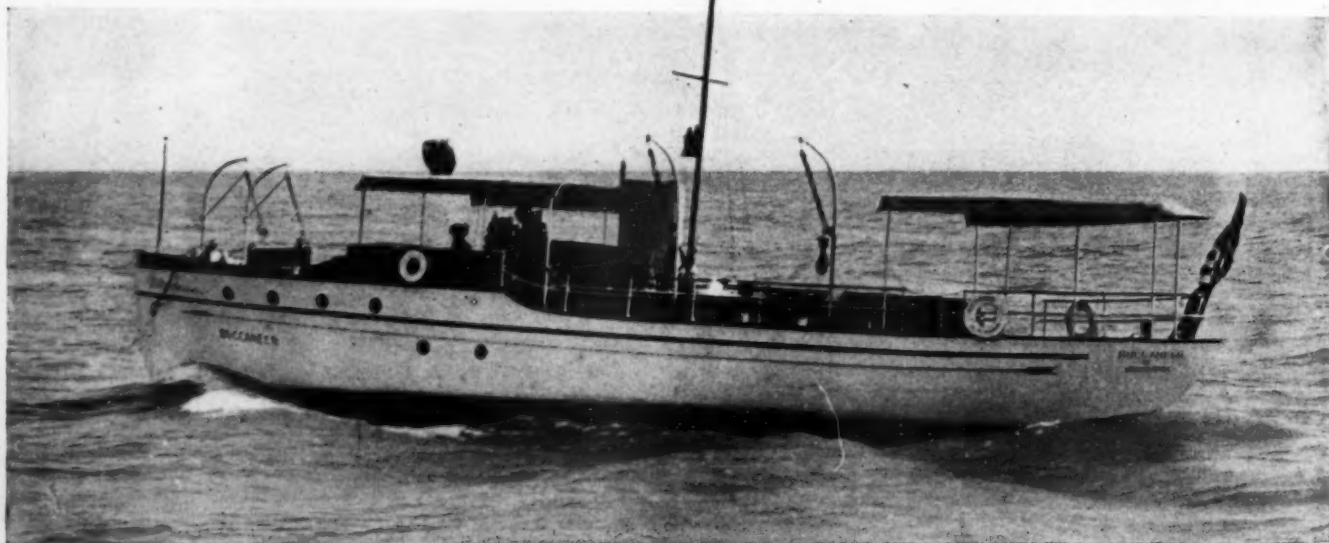
**Keel Base Board & Shoring.**—A 2 in. board, about 20 ft. long and about 8 or 9 in. wide, is best for the keel base, but the same results can be gotten by putting 1 in. boards together and letting those on one side break joints with those on the other. Pine spruce or hemlock or any other soft wood is best for this. For staying nearly any old edgeings or boxes will do.

**Fairing Batten.**—3/4 in. x 1 in. yellow pine, white pine, mahogany or spruce without kinks and yanks.

## Fittings for Viper II.

1 gross of 1 1/2 in. No. 12 or No. 13 galvanized screws for frames, seats and keel. 3 doz. 1 1/4 in. No. 10 galvanized screws for coaming. 36 3/8 in. oak plugs for coaming. 1 lb. 2 in. galvanized nails (wire) to fasten on wings. 5 lb. 1 1/4 in. galvanized boat nails for planking. 2 lb. of 1 1/2 in. galvanized boat nails for deck and floor. 36 5 in. x 3/16 in. galvanized rivets for center keelson. 36 3 1/2 in. x 3/16 in. galvanized rivets for stringer. 40 3 in. copper rivets to fasten clamp to frames, top side. 4 doz. 1 1/4 in. No. 8 galvanized screws, to fasten clamp to frames, lower side. 1 galvanized rudder. 1 galvanized rudder post. 1 galvanized tiller. 2 galvanized bow chocks. 1 galvanized stern chock. 6 iron braces for underside of wings. 21 ft. steering line. 1 strut and bolts. 1 galvanized gasoline tank. 4 single blocks for steering line. 1/2 lb. cotton calking. 1 bow flag pole socket. 1 stern flag pole socket. 2 3/4 ft. galvanized rod to fasten down engine bed, 3/4 in. (1 lb.). 4 5 in. x 3/16 in. galvanized rivets and burrs to fasten down engine bed. 2 6 in. x 5/16 in. galvanized rivets and burrs to fasten down engine bed. 4 7 in. x 5/16 in. galvanized rivets and burrs to fasten down engine bed. 2 pieces 3/4 in. brass rod for bow and stern bits, 6 in. long. 1 steering wheel. 8 6 in. x 1/4 in. galvanized rivets and burrs for shaft log.

The motor shown in the illustration is a 15 h. p. Ferro, but almost any motor up to 20 h. p. may be used with this construction.



Buccaneer, a new addition to the Lake Michigan fleet, was designed by Whittelsey & Whittelsey. For a description of this boat see page 50.



# The Long Distance Races of 1910.

Why Have the Entry Lists Been Smaller This Last Year Than in the Past Few Seasons?  
A Consideration of the Alaska Race and Other Long Distance Events.

By Chester L. Wynn.

**W**HAT are the warnings that should stand out above all others for the motor boating fraternity of the country after due consideration has been given to the long distance cruising events of the season just closing? Why is the aftermath of "whys" and "ifs" greater this year in every club no matter where you go—the Atlantic seaboard, the Pacific slope or the Great Lakes? Is it that the actual performance system of handicapping should be applied to the long runs to make them a success? Is it one or several of the "knocks" that are heard against this branch of the sport—this long distance racing which certainly brings out all that is good in a navigator and generally reveals all that is bad—that is the key to the situation? Or is it just a plain ordinary lack of interest in long distance events?

The writer was in an exceptional position to become conversant with the conditions surrounding the inception of two of the longest races in the history of the sport this season. He was in Philadelphia during the early months of the Spring when Commodore J. G. N. Whitaker, of the Yachtsmen's Club was working with might and main to obtain a formidable list of entries for the Philadelphia-Havana race which was to be the premier in point of distance. He was on the pier at Atlantic City that stormy night of June 9 with the scores of yachtsmen who braved a gale to watch for the homecoming of the little craft that had been driven down and then up the Atlantic coast in as pretty a contest as could be desired. Surely no one who heard or joined in the involuntary cheer that was given there in the blinding rain, when the red light of Caliph was sighted, bobbing up and down on the turbulent seas, could say that there was not keen interest in the great Havana Race.

A month after witnessing the successful finish of the longest race in the history of motor boating, the writer came to the Puget Sound country where motor boatmen know no dividing line of seasons, where regattas are held on Christmas Day and where on November 1 the skipper is not looking for a bare spot along the beach where he can pull up the old "tub" to weather the buffeting of the winter storms under canvas. He came to watch the preparations for another long distance race—the Ketchikan, Alaska to Vancouver, B. C., event—which was to have taken place in 1909 and which had been talked of for a couple of years.

**T**HE feasibility of an Alaska-Puget Sound race had been demonstrated for several years past by the fact that power cruisers had wended their way up and down the Western Canadian coasts to and from the far North in comparative safety. Puget Sound with its days of gloriously smooth waters intermingled with a few that bring rough, choppy rollers to add spice to its surface had a full quota of craft eligible for long distance racing which could hardly be equalled in any waters in the country. But there was one thing it did not have—that enthusiasm which makes races and causes them to gain high position as annual events. At least it did not nurture any such feeling toward the Alaska race.

From the standpoint of sportsmanship, the Alaska race was a failure. But in the way of showing that such a race could be run and run successfully with a proper show of spirit it was a decided success. On the day set for the start of the race there were at least a dozen trim and eligible boats in Alaskan waters.

Practically everybody on the outside thought that they were going to enter and few would have believed that the race was going to be a fiasco.

There was somewhat of a rude awakening when Limit, owned in Vancouver, and one of the most feared and most dependable racers along the north Pacific coast, came to the line—the only bona fide starter in the first real long distance race on that coast. True, there were two other boats that contested after a manner with Limit for the cup offered for the winner of the event, but there seems to be some doubt as to whether they should be seriously considered as contestants.

It cannot be said, however, that the Alaska race was not entirely worth while. The manner in which Limit stemmed the somewhat treacherous tides along the Alaskan coast and drove on through the fogs of the British Columbia waters to Vancouver was worth while. The splendid showing of the two smaller boats, St. Anthony, a 36-footer with a 15 horsepower engine, and Spark, a 31-footer with a 20 horsepower engine, was certainly worth while. The contestants encountered rough weather at certain points on the run, but not even the smallest of the craft experienced any trouble and this in itself was a demonstration of the feasibility of the race which should in future years result in a larger number of high powered craft being driven over the course for prizes. Beyond a doubt it proved that the waters along the North coast are as desirable for racing purposes as could be found on any shore.

**T**HE showing made by the Limit, which has a record for actual performance work in past events of the Northwest, was one that has seldom been approached by cruisers of her class. Powered by two 30 horsepower Ralaco engines she ploughed her way down the coast over the 618 miles at an average speed of 10.65 miles per hour, a record which has never been equalled in any event where the seas from day to day were so variable. One hour she would be running through a sheltered inlet and the next charging through waves hurled at her through a break in the chain of Islands. Her engines kept at top speed without a miss for the whole distance and the rough weather that she encountered in Millbank Sound, Queen Charlotte Sound and Dixon Entrance did not embarrass her in the least. Yes, the run of Limit augurs well for future events over the same course.

From the start of the race there was never any doubt of Limit winning but the contest was characterized by the splendid manner in which the two smaller boats went through it. The showing of the 31 and 36-footers, with 20 and 15 horsepower engines, respectively, will set a standard for future events. The race between these two was fast and exciting and one thing is most obvious—long distance cruising outside the waters of Puget Sound on the North Coast from the point of feasibility has been given a great impetus throughout the Northwest.

It has been argued that next year will see fewer long distance races arranged and that more events requiring less expenditure of time will be participated in. The experts are turning to the lists of entries in the various big races of the season, which it cannot be denied, showed a woeful falling off from the usual contingents at the starting lines to prove their assertions. They point to the fact that there were only five starters in the great Havana race, but it is doubtful if this can be used as

a strong argument. While it had been expected that fully twice that number would enter the run, it must be remembered that the 1,400 mile course had never seen a previous contest of the kind. It was an unknown quantity besides being an undertaking that would involve considerable expense.

**B**UT the lack of interest in the other long distance cruises which are termed as annual events on both coasts was most noticeable. The Marblehead race, which has always been popular had only four starters and the Bermuda contest saw only two boats fighting for the valuable prizes. This same unwillingness to enter the long distance events was felt in the Pacific International long distance event, which is the big annual contest on Puget Sound. In 1908, this race brought out 19 starters and in 1909, 26 nosed the mark awaiting the gun. But this year only 10 cruisers were on tap at Tacoma to be measured and to join in the run to Victoria, B. C., via Vancouver.

Motor boatmen had every incentive to pit their strength against the other craft. The weather had been ideal for some days before the scheduled start of the contest. There had been little or no quibbling over previous contests to cause them to say "Oh, what's the use?" And then, too, an opportunity was afforded them to try out their boats under both the actual performance and the measurement systems, a prize being offered for the winners under each handicap. It had also been decided that the boats starting under the measurement system should not have all the handicap applied at the start of the race. It was to be equally divided up at the start and the finish, a thing that several had urged for some time.

**W**HILE not arguing so much for the advance of the long distance branch of the sport, the smaller number of entries may have been the cause of a most successful working out of the measurement handicap system. It demonstrated above all things that the measurement method of rating encourages the construction of a safe type of boat, giving no advantage to the big pocketbook, which, after all, is the fundamental principle of the system. A glance at the records of big races will show that it is seldom the highest powered boat that wins out and gains the prize. About the only encouragement which is held out strongly to the man who loves the sport for the sport's sake and who enjoys nothing better than driving his little cruiser against all odds in these long distance runs is that he knows that his smaller engine, if she does her work well, will stand just as much show as the one that costs two or three times as much. He knows that if his craft is powered up to her economic speed limit and he keeps her there and in good trim, he has as good a chance as the other fellow.

Thus it was that Half Moon with a 30 horsepower engine won the third annual International race when she was preceded over the line by both Limit and Salmonero, which had 50 horsepower engines, after a most exciting and pretty contest. A little over a half hour separated the first three boats to reach Victoria and it had been hard fought over the entire length of the 238 mile course. Mistakes in navigation lost some of the boats much ground and this was caused to a great degree by the stress of weather sending them off the course.

WHILE everybody was apparently satisfied with the results of the International race under the measurement handicap system, one thing was most evident—the first trial of the actual performance method of racing as attempted on the run was a failure. It may be that the manner of figuring out the handicaps was not all that it should have been, but various authorities had argued for that method from time to time and it was just as well that it was given a thorough trying out. It was to give a practical demonstration of both systems that the P. I. P. B. A. used both handicaps in their annual event this year.

The association in figuring on the handicap to be given under this plan decided to take the time of the boats over a measured mile course which it was thought multiplied by 238 miles, the length of the course, would give the time to be allowed to each boat. At the conclusion of the race the actual time of each entrant was to be taken and with this as a divisor of the allowed time the percentage of variation was to be determined. When it was found

after doing this that the allowed time exceeded the actual time by more than three per cent the boats failing to come within the allowance were to be disqualified.

But of course there was something that was not figured in and it was a something that can hardly be determined on when the actual performance method is to be put into play. The measured mile at Tacoma was accurate to the inch, practically free from tides, heavy seas and currents. Besides it was a calm, still day in July when the trials were held and no wind entered into the matter. The promoters of the actual performance method had no way of telling that the run of 238 miles up to Vancouver the contestants would have about 20 hours of favorable tides and currents with only about 2 hours of head seas to embarrass them. They apparently had not thought of that.

\* \* \*

ALL the way from Port Townsend the racers had the tides going with them and by the time that they turned around in Vancouver harbor for the short run back to Vic-

toria, the finish of the race, they were fortunate, or unfortunate, enough to strike into a strong ebb tide. This, of course, was found out after the race had been run or was in the running and all but three of the boats had to be disqualified under the 3 per cent ruling. Marana was one of those that qualified under the actual performance plan of rating, but it is doubtful if she would have done so had she not lost 4 hours by overrunning her course through not catching the lightship. Marana was third under that system and like her the two that came in first and second had experienced some trouble or other either in navigation or minor breakdowns. At any rate, it required some unnatural condition to send even three boats in to a position to qualify. It is easily seen that the conditions for the successful trying out of the system were highly unfavorable but at the same time it is hardly likely that actual performance will figure in races on the coast or in the East until some very radical changes have been made in the methods of rating—changes such as are shown to be required by past experiences.

## Cavitation and Its Causes

Why a Screw Propeller, if Over-Driven, Revolves in an Empty Space of Its Own Creation.  
The Description of Mr. Parson's Original Experiments on This Subject.

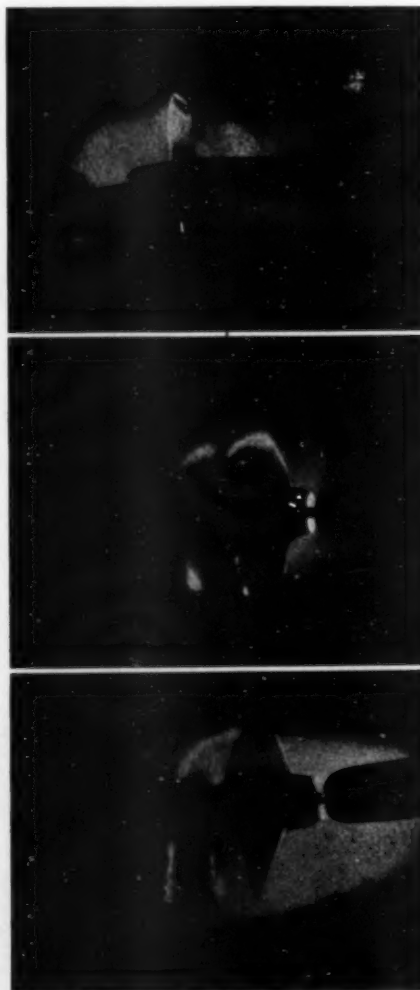
By Thomas L. White.

THE formation of cavities in water by screw propellers when driven at high speeds was first suspected in 1895, during the screw trials of the destroyer Daring, built by Thornycroft for the British Admiralty. It was then observed that if the engines were pushed beyond a certain speed the useful output in the form of increased propulsive effect was much less than it should have been, and it became clear that the speed of vessels was approaching a stage at which propulsion by screws became less efficient. In short, there were indications that a hitherto unsuspected phenomenon was manifesting itself, and to this phenomenon, when he had established beyond doubt by direct observation that it consisted in the screws racing in a self-created verucous cavity in the water, Parsons gave the name Cavitation. The illustrations herewith are from photographs of Mr. Parsons' experiments.

The interest of cavitation to the motor boat owner lies in the fact that the conditions out of which it arises are most likely to occur with craft of moderate dimensions. In a small boat, in the interest of economy of space and weight, the natural tendency is to install a small motor to turn a small propeller comparatively rapidly, rather than a large motor to turn a large propeller comparatively slowly. If, however, there is a limit to the number of revolutions at which a given screw propeller can be efficiently rotated, it follows that there is also a limit to weight efficiency in the power plant of a motor boat set not only, as in the case of the motor car, by the limitations of the motor itself, but also by the limitations of screw propulsion.

The cardinal principle underlying all methods of propelling boats by their own power is that the measure of the propulsive thrust is the amount of water thrown astern per second multiplied by the velocity imparted to it. Now, very little reflection will show that the action of a screw propeller in projecting a stream of water sternwards is twofold. While part of the water in the propeller race is moved by the direct thrust positively imposed on it by the rearward surfaces of the rotating blades, part is impelled by its own weight and the pressure of the atmosphere above. This is clear, for otherwise a space would be left by that portion of the propeller race which is directly projected. In other words,

part of the water moved sternwards is pushed and part of it is "pulled." Or, to put the same idea in still another form, the in-



Actual photographs of the phenomenon of Cavitation.

creased pressure on the rear surfaces of the blades due to the vertical action of the rotating propeller drives the water behind the propeller backwards, while the decreased pressure on the forward surfaces of the blades, also due to vertical action, causes the unbalanced pressure on the water in front, due to its own weight and the atmospheric pressure, to drive it backwards. Also, the portion of the propeller race which is moved positively is less than the portion which follows up. The reason of this is that the water which is positively propelled is also rotated as a whole, part of the energy of the propeller which would otherwise be positively utilized in creating rearward momentum in the water being thus wasted.

It is evident that, however fast a screw propeller may rotate, the positive thrust of the rear faces of the blades will always be effective. On the other hand, it is equally evident that the portion of the propeller race which is moved by the action of gravity can only flow in at a certain rate to take the place of the water which is positively projected. If the propeller blades push back the water in contact with their rear surfaces too quickly, gravity will be unequal to replacing the water so propelled, and there will result a cavity or hole in the water in front of the propeller, of which the dimensions will increase with the velocity of rotation. But before looking more closely into the laws which regulate cavitating action, let us consider the analogous phenomenon presented by the action of the side wheel, for what occurs there is simpler and has also the great advantage of being directly observable.

The rate at which water will flow at a depth of  $h$  feet into an empty space open to the air is  $\sqrt{2gh}$  feet per second. The quantity  $h$  is known as the "head." Let us assume that our side wheel is furnished with floats 3 feet in depth, and that when it is at rest in still water the top edge of the lowest float is just awash. Let the real slip, that is, the velocity imparted to the wheel race, be 8 feet per second. For the water which follows up the floats to have this velocity it must have a head

$\frac{8^2}{2g}$  of —, or 1 foot. It therefore follows that for a depth of 1 foot the rear surface of the



upper portion of the lowest float will be out of the water. If the real slip were  $\sqrt{2}$  g.3, or 14 feet per second (approximately), the whole of the rear surface of the float would be exposed, and the efficiency of the side wheel half of what it would be with proper immersion.

Coming now to the screw propeller, it is clear that the actual velocity with which the vertical surface moves backwards corresponds to the circular velocity of the float of a side wheel. But as the screw propeller is wholly immersed there is available, to force the water to follow up, not only the pressure due to the head  $N$ , but the pressure due to the weight exerted by the atmosphere on the free surface of the water above. Taking this as equivalent to a water head of 35 feet, we have  $\sqrt{2g(h+35)}$  as the theoretical maximum velocity which can be imparted to the propeller race without cavitation occurring. In practice, however, this value is much too large. In the trials of the Daring it was found that three-quarters of an atmosphere (11¼ lbs.) was the maximum thrust per square inch which could be obtained from a screw working efficiently at a depth below the surface of 1 foot, which was the depth of immersion of the tips of her blades. This result was afterwards corroborated by the trials of the Turbinia. The reason of this falling off in practice is that cavitation commences at the extremities of the propeller blades long before the mean pressure enacted by the after faces of the blades approaches in magnitude the pressure of the atmosphere. The thrust exerted at the blade tips is always much greater than that exerted near the boss, and it is this, and not the average thrust, that determines when cavitation shall ensue.

Referring now to the experiments of the Hon. C. A. Parsons, to whom the accompanying photograph is due, to appreciate his beautiful method of observing accurately the nature of cavitation it should be borne in mind that when a cavity is formed in the body of

a mass of water it is not strictly speaking vacuous, for it is filled with water vapor. This vapor exerts a pressure equal to what is known as the "vapor tension" for the temperature at which the water happens to be, and it is evident that this pressure tends to maintain the cavity and to oppose its being filled up by the superincumbent water actuated by its own weight and the weight of the atmosphere above.

At 212 deg. F. the vapor tension of water is exactly equal to the pressure of the atmosphere. Consequently, if water be heated to within a degree or so of 212 the pressure within a cavity formed in its mass will almost equal the pressure of the atmosphere above, and the only effective pressure left to fill the cavity will be due to the head of water above it. If this head be very small, say 2 or 3 inches, then such a cavity will be very easy to maintain by the action of a screw propeller, for a comparatively low number of rotations per second will remove the water faster than the small head available can replace it. With this prefatory explanation, we append Parsons' own account of this experiment:

"To investigate the question thoroughly, a spring torsional dynamometer was constructed and fitted between the engine and the screw shaft, measuring the actual torque transmitted. The measurements conclusively proved that the cause of failure lay entirely in the screws, and with the further object of investigating the character of this waste of power a series of experiments was made with model two-bladed screws of 2 inches diameter, revolved in a bath of water heated to within a few degrees of boiling point, and, in order that the model screw should produce analogous results to the real screw, it was arranged that the temperature of the water and the heat of the water above the propeller as well as the speed of the revolutions should be such as to closely resemble the actual conditions and forces at work in the real screw, the object in heating the water being to obtain an

increased vapor pressure from the water so as to permit a representation of the conditions with a more moderate and convenient speed of revolution than would otherwise have been necessary.

"The screw was illuminated by light from an arc lamp reflector from a revolving mirror attached to the screw shaft, and fell on it at one point only of the revolution, and by this means the shape and form and growth of the cavities could be clearly seen and traced, as if stationary. It appeared that a cavity or blister first formed a little behind the leading edge and near the tip of the blade, then, as the speed of revolution was increased, it enlarged in all directions until, at a speed corresponding to that in the Turbinia's propeller, it had grown so as to cover a sector of the screw disk of 90 deg. When the speed was still further increased the screw, as a whole, revolved in a cylindrical cavity, from one end of which the blades scraped off layers of solid water, delivering them into the other. In this extreme case nearly the whole energy of the screw was expended in maintaining this vacuous space. It also appeared that when the cavity had grown to be a little larger than the width of the blade, the leading edge acted like a wedge, the former side of the edge giving a negative thrust. From these experiments it would appear that in all screws, of whatever slip ratio, there will be a limiting speed of the blade, depending upon the slip ratio and the curvature of the back; in other words, upon the slip ratio and the thickness of the blade; beyond this speed a great loss of power will occur; and that should the speed of the ship be still further increased, the adoption of somewhat larger pitch ratios than those at present usual will be found desirable.

"In practice with ships cavitation results in loss of propulsive effect, and not in racing of the propellers.

"In the model experiments in hot water the effect was both loss of propulsive effect and also racing."

## The Prize Contest in Questions and Answers

ON THE following five pages appear the answers to the questions which were printed in the September issue of **MOTOR BOATING**. The question regarding the best method of hauling out a motor boat without the aid of a marine railway was an extremely popular one, as it brought in more answers than any other question that has ever been run in the Contest. In selecting those answers that we have published, from the large number of good ones submitted, we have endeavored to choose those that would be of the greatest value to the largest number of readers and we have been forced to leave out a number of good ones because of lack of space. The other two questions also brought a number of very good answers, and we feel that every motor boatman, no matter how wide his experience may have been, will find something of value to him in the following pages.

In your motor boating experience, at some time, you must have come face to face with a question or problem that you would like to see discussed or that you feel that you could answer for the benefit of the rest of us. Why not send this in?

**THE QUESTIONS FOR THE JANUARY CONTEST ARE THESE:**

Give instructions and drawings for the construction of a practical extension berth for a cruiser of moderate size.

*Suggested by Harry Felling, Kansas City, Mo.*

Describe the best method of installing the engine controls at the bulkhead of a runabout, to insure satisfactory one-man operation. Sketches are desirable.

*Suggested by E. Drolet, Park Laval, Quebec.*

What type of bow and stern is the most suitable for an all-round cruiser of moderate size, and why is it the best?

*Suggested by Dr. Walter T. Hagen, Green Bay, Wis.*

Answers to these questions, addressed to the Editor of **MOTOR BOATING**, 381 Fourth Ave., New York, must be:

(a) In our hands on or before November 25th, (b) not over 500 words long, (c) written on one side of the paper only, (d) accompanied by the senders' names and addresses. (The name will be withheld and initials or a pseudonym used if this is desired.)

Questions for the next contest should reach us on or before the 25th of November.

**THE PRIZES ARE:**

For each of the best answers to the questions above, any article advertised in **MOTOR BOATING**, of which the advertised price does not exceed \$25, or a credit of \$25 on any article advertised in **MOTOR BOATING** which sells for more than that amount.

(There are three prizes, one for each question, and a contestant need send in an answer to but one, if he does not care to answer all.)

For each of the questions selected for use in the next contest, any article advertised in **MOTOR BOATING**, of which the advertised price does not exceed \$5, or a credit of \$5 on any article advertised in **MOTOR BOATING** which sells for more than that amount.

For all non-prize-winning answers published we shall pay space rates.

When you send in your answer state what you will take if you win the prize.

# Hauling Out the Motor Boat.

How This May be Done by the Amateur Without the Help of a Marine Railway.  
A Number of Practical Methods Requiring but Little Equipment.

THE PRIZE CONTEST—Answers to the First Question in the September Issue.

## With and Without the Tide.

The Prize Winning Answer.

**A**LTHOUGH on salt water now, I originally came from the Great Lakes, and so I shall describe a method I used to haul out under both conditions.

To begin with my boat, Sea Rover II, is a heavy 32-ft. hunting-cabin cruiser, with a 15 h.p. heavy duty engine, beam 8 ft., draft 30 ins., straight keel, considerable dead-rise and an overhanging counter. The engine alone weighs 1,100 lbs.

As there is no tide on the Great Lakes to assist one in hauling out, I used the following plan, two of my companions, who were my "crew" during the season, assisting me:

and on the car. That is, we raised the bow of the boat by placing weights on the stern and sunk the after end of the cradle in order to get the cradle started under the boat. We then put a treble purchase tackle on the cradle, shoved the plank tracks down under the cradle, and also introduced a roller under the forward end of cradle. We used 3-in. iron pipe for rollers. Five are sufficient. We heaved on the tackle until the cradle had a good bite on the first roller. The plank tracks were then straightened out, the roller knocked square with the tracks and the next roller rolled down. We again heaved on the tackle until the second roller caught. We continued this until the boat was high and dry, allowing the rollers to run out one by one, and

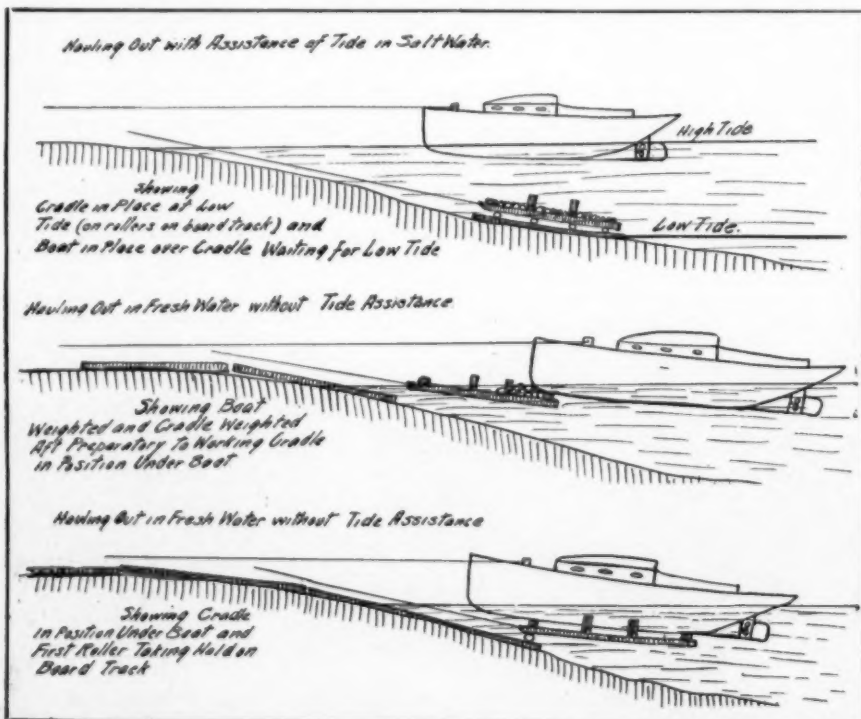
on to keep it down. At high tide, just on the ebb, I ran my boat over the cradle and waited for the tide to go down sufficiently to settle boat in cradle. I then proceeded as described above for fresh water. SEA ROVER II.  
New York City.

## Large and Small Boats.

**I**F the boat is to be moved any great distance and is less than 25 ft. in length, the simplest way to load it on the wagon is to back the latter into the water. If possible, the wagon should be flat-topped, on the order of a hay-rack, and must be backed into deep water, so that the boat can be floated over it as near as possible in the fore and aft center. Hitch it there by light lines, previously made fast to each corner of the wagon, leaving the lines slack so that the boat may settle to either bilge when leaving the water. Bring a heavy line from your mooring cleat, or, better still, from around the stern or stern post, and make fast to the wagon tongue. A heavy line should have been made fast to the end of the wagon tongue, and if the load is not too heavy, the horses can be hitched to the end of this line on shore and the outfit pulled out.

If you have a heavy boat, a tackle should be hitched to the hauling rope and to a tree, post, or a "dead-man" (buried piece of timber or plank) on shore, and the team hitched to the end of the tackle. Boats weighing up to 3,000 lbs. can be hauled out in this way, even on muddy or steep banks. When the load has reached level ground, the boat can be put on an even keel and blocked. The blocking should be well spiked and some burlap or rags should be placed between planking and blocks for protection. Now is the time to remove the mud and weeds, as a little scrubbing at this time will remove easily what it would take hard work to get off when once dry.

If the boat is to be left near the place where hauled out, lay two long timbers, 4 x 4's for boats up to 30 ft. and 6 x 8's for 50-ft. boats, about two-fifths the length of the boat apart, at right angles to the shore line and running into water a little deeper than will float the boat. Fasten these slides as shown in sketch, keeping the space between uniform. Make a cradle as shown of 2 x 6's up to 4 x 8's, depending on size of boat. Place cradle on outer end of slides and sink both by filling ballast box with rocks until they rest on the bottom. Put the boat on the cradle, sideways to the slides and parallel to the shore. Hook a tackle to the bridle, made fast to each end



The outfit described by "Sea Rover II" and his methods of hauling out with and without the assistance of the tide.

We first "borrowed" two 6 x 6 timbers about 12 ft. long, and towed them to the place where we intended hauling out. To this point we also rolled four railroad ties down from the railroad tracks. After placing the timbers parallel and about 6 ft. apart, we spiked down the four railroad ties at equal intervals across the two timbers, and then nailed wedges on the two middle cross ties to form a sort of cradle or car, as shown in illustration.

This makes a pretty heavy raft, and one that is hard to sink. So, if any one intends to follow my scheme, and railroad ties are not handy, I would advise using 4 x 4's as they require considerably less ballast to sink.

We next laid a number of planks side by side about 5 ft. apart, to form a sort of track on the soft sand. The cradle or car was now shoved overboard and then partially sunk by placing on it lengths of car tracks, heavy stones, etc. Of course, as the car or cradle had no trucks guided on rails, we were obliged to work in the water.

The boat was now brought bow on to the cradle, and the latter was then worked under the boat to about amidships. This was accomplished by shifting weights on the boat

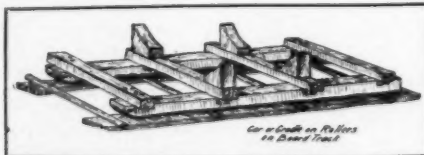
substituting cross timbers a little thicker than the diameter of rollers, to permit rollers being easily inserted again the following spring.

We now shored the boat well up by nailing wedges on the cradle. We then went down to the shipping and bargained with an old lumber schooner skipper for one of his old sails. We succeeded in picking one up for \$4. We stretched this over the boat to protect it from the ravages of winter. On account of its weight such an old sail makes an excellent covering.

Of course we drew out the bilge plugs and drew off the water from the engine. The engine ought also to be tallowed. We neglected this, much to our sorrow.

A boat that is fairly flat floored can be hauled out as described, but without any cradle. In such a case the boat would careen and rest on the rollers at the keel and at the bilge. The tackle should not be fastened to the bits but to a rope passed around the boat, so as to distribute the strains.

In hauling out in salt water I waited for low tide and put down two parallel planks for a track, and placed the cradle in place on rollers on these planks. I then anchored the cradle in place and put enough ballast



The cradle described by "Sea Rover II."

of the cradle as shown, and to a "dead-man" or tree, and with a team or by hand haul the cradle and boat up the slides, which should be well greased with tallow. Cant the boat by means of a bow and stern line as soon as it begins to leave the water, so that it will lie on the bilge nearest shore. When you get the boat where you want it, put it on an even keel (with jacks if necessary) and block it securely and closely, so that it will not be strained, and don't forget the weeds.

A light frame of 2 x 4's and 1 x 2's, covered



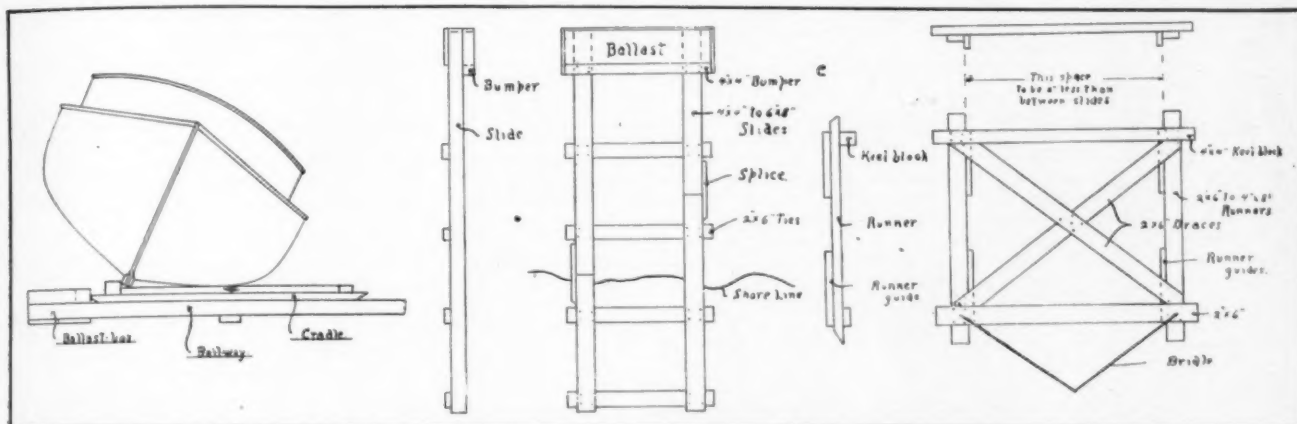
with tar paper, will protect all the varnished work perfectly and is very inexpensive. Put the rest of your money in insurance.

H. B. VEHSTEDT.

Racine, Wis.

6 and hauling the cradle under the boat with a line. It will help to build up temporary chocks on the forward 4 x 6 to just about fit the boat at the point where you wish the cradle to stop. This will save the trouble of

aid of two men, disassembled a wood carrying wagon and took both axles with their respective wheels right into the water where the boat was lying. This was easily done, as the bottom is a hard, sandy one and slopes



Mr. H. B. Vehstedt's equipment consists of a cradle which slides on a wooden track.

### Substantial Outfit Worth While.

I AM assuming that the boat to be hauled out is in the neighborhood of 32 ft. and weighing about 10,000 lbs., as that is about as large a boat as the average amateur would care to handle on the beach. We will also figure that the hauling out stunt will be repeated a number of times, so that it will be quite worth while to take the trouble to get up an outfit which will last.

The cradle shown is extremely simple and cheap to construct, and as the timbers need not necessarily be sized to accurate dimensions, any old lumber you can pick up will do. Only four bolts are used for fastenings, so that it can be easily knocked apart and stowed in the boathouse when not in use. The rollers can be made of old spars or turned from pine or oak at a trifling expense. Oak ones will run easier and last longer.

The rollers simply turn in semicircular notches in the fore and aft pieces, so these notches should be made as smooth and round as possible, and greased with tallow.

The modus operandi is just the reverse of the usual marine railway. The rollers are placed under the cradle and lashed to the 4 x 6's with a couple of turns of marline to keep them from getting away. The boat is then brought into about three feet of water and the cradle slid under her, placing the keel at the stem between the chocks on the aft 4 x

6 and hauling the boat up as she comes out of the water.

Of course, you will have to have a gently sloping beach to haul out on, and place planks for the rollers to run on. The amount of power to be applied will depend entirely on the slope of the beach and the weight. With a 10,000-lb. boat and a beach sloping 1 ft. in 5, four good husky boys should get her out with a triple and double block tackle. If the beach is very steep it will pay to set up a winch, such as riggers use, or a regular shipyard "crab," which works like a capstan.

Ordinarily, in good ground you can take your two big anchors and plant them one ahead of the other in the beach, and they will be sufficient to fasten your tackle to. In hauling out several boats in winter this cradle will be found particularly handy, as the boat can be hauled out and only wedged up 1/2 in. above the cross pieces, just sufficient to take off the weight, when the rollers can be slipped out and the whole rig easily pulled from under the boat.

H. JORDAN MACKENZIE.

New Orleans, La.

### Lumber Wagon Used.

MY boat is of the full torpedo stern type, the propeller and rudder having no protection except the shoe. In order to haul her out I had to use a way that was much criticized, but which proved satisfactory in every way. To do it, I, with the

very gently. There was little water under her, and we had to hang to the stern to make the forward end rise so that we could place the forward axle right under her engine bed. We then slipped the other axle under the stern, just aft of the rudder post. After this we laid two long poles on the axles, one on each side of the boat, tied them securely to the axles, and blocked the boat so as to prevent all side movement. This done, we had no difficulty in hauling the whole outfit out with the aid of a strong cable and a capstan placed securely ashore.

SIXTO E. GARCIA.

Merida, Yucatan, Mexico.

### Sidewise on Skids.

FOR a boat of the semi-speed type, with a sharp bow and a flat stern, the wheel being protected by a skeg, the following method is easy and quicker than it looks.

Select a place on shore where the slope is 20 to 30 degs. with the horizontal. Lay two skids, preferably of 6 x 6-in. timber, at right angles to the shore line, far enough out so that the boat may be floated over the outer ends. The skids should be so spaced that one will be under the skeg just forward of the wheel, and the other one a few feet back from the bow.

Place two loops of rope, one at the bow and the other at the stern, entirely around the boat. Run a rope from each loop, and tie them together about as far from the boat as its length. Now run a line from the knot to a block or system of blocks.

The boat may now be pulled out sideways, the direction of pull being parallel to the skids. The type I have mentioned will heel over on its side, sliding on the bilge and skeg at the stern and on the side of the bow in front.

It may be advisable to place a short piece of plank under each end and to grease the skids. The planks will serve as runners or shoes and the grease will considerably reduce the labor.

To get the boat back into the water, slack off on the blocks and use a lever to pry it down.

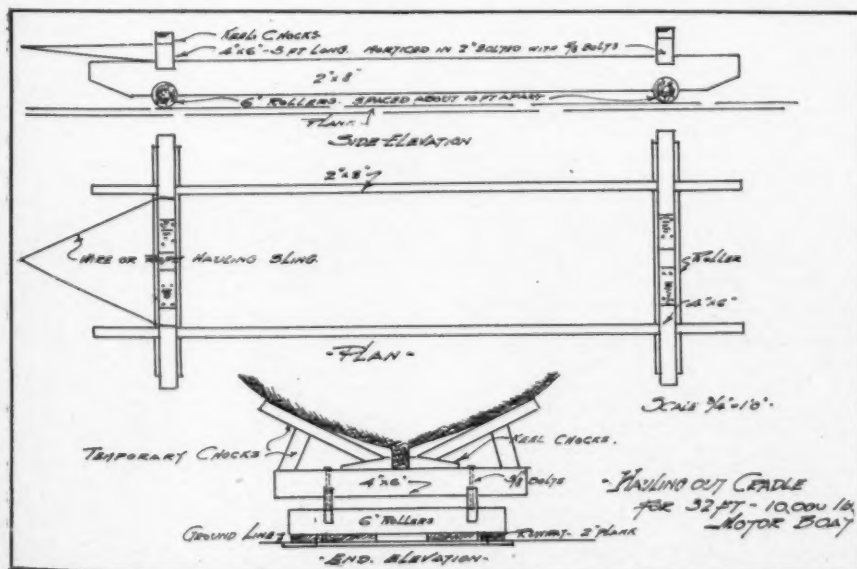
W. S. R.

Chicago, Ill.

### A Simple Capstan.

THE halftone shows a very effective hauling out rig, well adapted to the requirements of the average amateur, and which has the advantage of being both cheap and practical. The outfit shown has been in use for several seasons and has always answered the purpose well.

The truck is about 16 ft. long by 4 ft. wide, and was built out of old lumber. The side



The rollers of Mr. Mackenzie's outfit are engaged by notches in the cradle frames.

pieces consist of two planks 8 in. x 3 in., set on edge, into which are mortised two cross-beams, one at each end. These are also 8 x 3 stuff. Cross-braces, 3 in. x 3 in., keep the frame in shape. The whole is securely bolted together. The keel blocks consist of two 2-in. planks nailed across the frame at each end. The axles for the wheels are secured on the under part of the frame by notching into the side pieces to the required thickness; a wooden cleat nailed over each notch prevents the axles from dropping out. The wheels are cast iron and about 10 in. in diameter, and have a very wide rim, allowing the truck to be used without rails.

The necessary power is supplied by a capstan, as shown. This is a plain and simple affair, built mostly of 3 x 4 lumber, well fastened together and thoroughly braced. It hardly needs any description, as the picture shows plainly what it is like. It is a very primitive get up, but powerful enough to move a house.

The purchase is an ordinary block and tackle, using one double and one single Becket block. The cable is  $\frac{3}{4}$ -in. diameter manilla, and is about 300 ft. long. The double block end of the tackle is made fast to a  $\frac{3}{4}$ -in. wire rope cable about 20 ft. long, which is fastened to the truck. This prevents wetting

when hauling a craft out of its element. In my case the sloping bank is muddy, with a grade of about 3 ft. for every 20. There were no facilities at hand except those created by my own ingenuity, coupled with suggestions offered by others who were interested in the problem presented.

First, I made a cradle upon which to place the boat preparatory to hauling. Procuring two spruce beams, each 6 in. square and 12 ft. long, I placed them 5 ft. apart on the bank and parallel. Close to either end of the beams I lagged cross timbers cut flush with the sides of the long ones. In the middle I lagged another cross piece, also 6 x 6, with the ends projecting 18 in. beyond the longitudinal or side pieces. The lags used were 10 in. long and  $\frac{3}{4}$  in. in diameter. This construction gave a rigid rectangular frame capable of sustaining several tons' weight, but to insure permanence I spiked blocks against the cross pieces, so they could not budge when the power was applied.

Roughly approximating the midship section of the boat by measuring the craft inside the ceiling, because the boat was afloat and I could not very well get at the bottom, I spiked uprights of 2-in. x 4-in. spruce at the ends of the middle cross piece, and from their tops ran two other pieces of the same

the middle one under the motor bed to sustain its weight and prevent seams from opening from a tendency to sag.

A stout rope was now made fast with a bowline to the forward cross piece and carried back to the middle beam, where it was again secured. This arrangement gave a bight or eye, into which the tackle block was hooked. My friends who had assisted in getting the cradle ready now tailed on to the hauling part of the tackle. There were perhaps a dozen of us, all strong and willing, and the boat could not resist the impulse to come up hill on her cradle when the strong-armed crew got busy. Within 15 minutes we had her high and dry, not forgetting to clean the bottom of marine growth while the planks were still wet.

The boat, resting firmly on the cradle, was then blocked up again to avoid strains, and the cradle itself was blocked clear of the ground as the rollers were removed, so that contact with mother earth would not rot it. All ballast was then removed and the plug knocked out. The boat was thoroughly flushed with water tossed from buckets, the motor was lifted out and the propeller and shaft taken to a place where thieves would not be likely to ply their trade. The canvas cover was fastened in place and the good old packet was left to her hibernation.

GEO. S. HUDSON.

Boston, Mass.

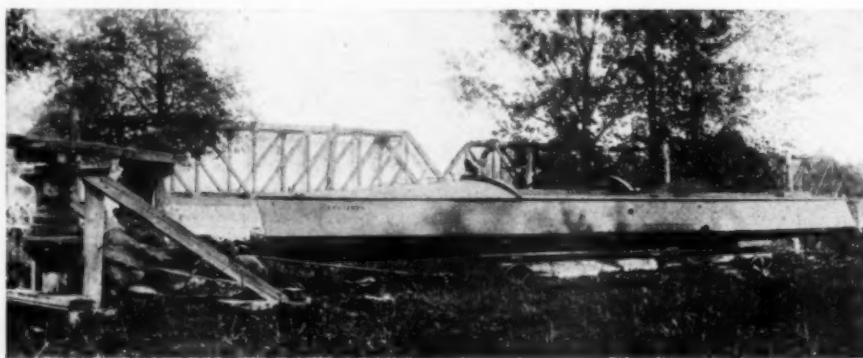
### Cradle and Tackle.

A CRADLE is not absolutely necessary, but if you have any regard for paint and bright work, to say nothing of a smooth hull, by all means have one. The cradle should be well made and of heavy lumber. The skids or side pieces should be wide and not less than 2 x 6 in. for even a small boat, in order to give a large bearing surface on the ground. The cross pieces must also be heavy, as they are to carry the weight of the boat all winter. They should not be spiked on, but bolted with the heads and nuts of the bolts set in flush. The diagonal pieces which keep the cradle square may be spiked, though bolting is best, and a good cradle will last for years.

Before taking the cradle to the beach be sure of the best place to haul out. There will, no doubt, be several places available. Examine each carefully, especially at low tide, and also note the high water mark, not that of the last tide, but the storm tides of previous winters, as shown by seaweed, wreckage, etc. The beach should be of sand or gravel, have a gentle slope and be free from large rocks. Beware of mud or clay as it makes hard hauling. There must be plenty of room above high water, with dry, firm ground. If possible, haul up on a southerly beach in the lee of a bluff, building or trees, and you will be able to start fitting out much earlier in the spring.

Having decided where to haul out, the first thing is to get an anchorage for the tackle. It must be in a direct line from the best point on the beach to the spot where the boat is to be left. A large rock, tree or building will do nicely, but generally these are not where they are wanted, in which case a "dead man" must be used; a driven bar is too unreliable. Fasten a chain or wire rope around a log or piece of timber and bury it from two to four feet deep where wanted, letting the chain lead off through the ground toward the beach instead of coming straight up to the top of the ground.

Now, take the cradle onto the beach at low tide, if soundings have been made at high tide it will save taking the cradle out any farther than is necessary, put some pieces of boards under the side pieces of the cradle and then weight the whole affair with rocks until there is no possibility of its floating or moving. Nail a stick (long enough to reach above high water) on each side of the cradle where the crotch comes, and then wait for a pleasant day with high water in the forenoon, and in the meantime get the rigging ready.



Mr. Drolet's capstan is simple in construction but extremely powerful.

the manilla rope and saves a lot of chafing besides preventing the twisting of the tackle. The wire rope is not shown in the photo, the block being hooked direct onto the truck when out of the water.

On very soft ground or sand, planks could be used to good advantage under the wheels. In the case of this particular outfit there has never been any necessity for either rails or planks, although at times boats weighing four times as much as the one in the picture have been hauled out with it. It has to go up a very steep bank, and at no time has it been necessary to have more than one man at the capstan bar.

Provided an amateur is willing to do the work himself and build his own truck and capstan, the cost of a duplicate rig like the one described should not be more than \$10 to \$15. The most costly item of the outfit is the block and tackle; it pays to get good blocks and rope. Iron wheels or pulleys can be purchased second hand from mostly any junk dealer for a song. The bill for lumber and fastenings should not run up to more than \$5.

E. DROLET.

Park Laval, Que.

### For a 25-Footer.

MY boat had moorings in a tidal river, with steep banks and poor facilities for hauling out. It became necessary for me to devise some simple method whereby I could get her up for overhauling and storage, and after a lesson taught by experience, with some veteran watermen as counselors, I hit upon a scheme that works to a nicety. The boat is 25 ft. long and 7 ft. beam, heavy, and with a straight keel. The 7-h.p. single-cylinder motor is installed amidships, just abaft the cabin, and this location of the motor is a factor not to be overlooked

dimensions down to the middle of the cross piece, being careful to leave space for the keel to rest on the timber. This arrangement serves for bilge blocks when the craft is being hauled out, preventing a capsize when clear of the water.

At low tide I placed this cradle at the lowest possible point on the river bank, resting it on rollers cut from an old mast, and the rollers resting in turn on planks laid in the mud to prevent the weight of the boat settling the outfit into the sticky mass. These rollers can be procured at a cost of about \$1 each from a mill, but the pieces of spar serve the purpose admirably. At each corner of the cradle I tacked laths, so that there would be no error as to the position of the cradle after it had been covered by the rising tide. Stones and pig iron taken from the boat, where they had served as ballast, were placed on the cradle to prevent its rising.

Meantime, I had planted a "dead man" 100 ft. from the high water mark. This arrangement is fashioned from a piece of 2 x 4 plank about 3 ft. long, with an eyebolt through the middle, a short length of  $\frac{1}{2}$ -in. chain being shackled to the eye. The "dead man" was buried about 2 ft. and the end of the chain was left about 6 in. clear of the surface of the ground, and into it was hooked the tackle, rove through two 8-in. blocks with double  $\frac{1}{4}$ -in. sheaves, the rope being about  $\frac{3}{4}$  in. in diameter.

When the tide had covered the cradle to a depth of 3 or 4 ft. the boat was towed over it, with the laths donating just where the submerged cross pieces were located. Lines at the bow and stern kept her in just the proper position till the tide receded, leaving the bilge blocking exposed. Wedges were driven between the hull and bilge blocks to straighten her up and prevent straining, the keel touching evenly on the cross beams, with



There should be five or six pieces of plank to make a runway, three or four rollers long enough to reach clear across the cradle, 2-in. pipe will do nicely, two rope falls and some pieces of rope for lashing. One of the rope falls should be heavy, with a pair of double blocks, or even triple if the boat is very heavy. The other is a luffing tackle and should be about 1½-in. to 2-in. line, with a pair of double blocks. A piece of chain or wire rope to reach from the anchorage nearly to the cradle will allow the use of short ropes for the tackle.

With everything ready, bring in the boat at extreme high water and hold her between the upright sticks on the cradle with fore and aft anchors. As soon as the grounds on the cradle, block her up right with pieces of board and wedges in the crotch of the cradle. As soon as the water gets below the front of the cradle, fasten the heavy fall to the front cross piece, haul taut and make fast; now throw the rocks off the cradle and with a pry or jack raise the cradle and get two rolls between it and the boards underneath, putting one under the back end first; hook the light falls to the hauling end of the heavy tackle and call in your friends. As the boat moves up the beach the planks and rolls are carried ahead, and when the falls are block and block, chock the rolls and get a new hitch. When the boat has reached the desired location, take the rolls out, but leave some pieces of board beneath the cradle to prevent its freezing into the ground.

Rearrange the blocking in the crotch and lightly nail it in place so as to bring the boat perfectly upright, put additional supports on

the cradle under the quarters and wedges under the keel if it does not bear fair on all the cross pieces.

The boat is now ready to strip and cover up.  
WM. GEO. ALLEN.

Portland, Me.

### Bolt in Keel.

**W**HERE it is possible to use a derrick, nothing better can be considered, but this is out of reach of the majority.

The simplest outfit is composed of, 1, a bolt in the keel; 2, a cradle; 3, block and tackle. This combination will haul out any moderately sized motor boat.

1. The Bolt in the Keel.—This little wrinkle is of surprising worth. Pulling out a boat by any fastening on the level of the deck is mechanically bad. The deck is imperiled, the direction of pull serves to increase the friction while to keep the hull upright is increasingly difficult as the boat emerges from the water. Bore a ½-in. hole in the forward end of the keel about one foot aft of the joint with the stem, and run through it a bolt projecting 2 in. on each side. Screw the nut on, make a loop in the end of your rope, throw it over the ends of the bolt and you can pull to your heart's content. When the boat is launched again, remove the bolt. Said bolt also furnishes the best means of fastening the hull to the cradle.

2. The Cradle.—This is a sled, and the boat is floated on to it. Its dimensions and construction will be governed by the hull to which it must be adapted. For example, a 25-ft. x 6-ft. compromise stern would be well

cared for on a cradle composed of three pieces of 2 x 8, braced as indicated in the sketch. About one-third of the way aft is built a "V" to hold the craft on an even keel. One condition is imperative—the cradle must be long enough to extend well aft of the rudder, otherwise you run a fine chance of smashing the rudder and shoe on a roller.

The cradle is run out into the water, and, pulling on the boat in the keel, the boat is floated onto it and made fast. Thereafter your problem is not one of handling a curved, tippy object, whose precious sides must not be scratched, but simply pulling out a sled whose rough bottom has no sanctity.

3. The Tackle.—A pair of double blocks with ¾-in. rope will pull out a boat weighing several tons. A snubbing post is necessary. A convenient tree on the line of march is nature's happy provision. Attach the block high enough to keep your tackle off the ground. If there is no tree drive a bar of iron well into the ground, when the hitch must be low. About this time a horse is a great convenience, though a couple of friends may be cheaper and more loquacious.

You will want several rollers and some timbers to run on. The writer pulls out on a sand beach. He finds 1-in. rough boards make the finest kind of ways, and they can be lapped at the ends; 1½-in. iron pipe will do for rollers.

Block up the cradle where you want it, and let the boat rest on it all winter. Inasmuch as a boat has long life, the expense for the cradle is relatively a mere trifle.

HERMAN F. SWARTZ.

Webster Grove, Mo.

## Placing the Engine in the Hull.

How the Amateur Motor Boat Builder May Determine the Best Location for the Engine. Some of the Considerations That Go to Determine This Choice.

THE PRIZE CONTEST—Answers to the Second Question in the September Issue.

### Try It and See.

(The Prize-Winning Answer.)

**B**Y an amateur, I understand, is meant one who has had no experience in boat building, is totally ignorant of the scientific rules governing displacements and distribution of weights, but, as the knock down boat builders say, can drive a nail straight, and saw to a mark. To such I offer a simple plan, "Try it and see." When the boat is ready for the engine, put boat overboard, having ascertained the weight of engine and bed, from the manufacturer, place a corresponding weight (stones will do) in boat, about where you would like the engine to be, also a weight corresponding to weight of filled gasoline tank, in the position it must occupy, then have two or three people get into cockpit. Observe her trim both at rest and when towed and you can easily see whether she has a tendency to bury her nose, or squat at the stern, and by shifting the weights the best location can be learned, when the boat rides easily, you have found the best possible location for both engine and tank, which answers the latter half of the question.

If the tank is forward, the engine bed will likely be right about midships, which seems to be the favorite location anyhow, and it is certainly the safest location for the amateur to select.

WILLARD R. HALL.

Philadelphia, Pa.

### Several Types Considered.

**I**N fixing upon the best location for the engine bed in a motor boat, very much must necessarily depend upon both the engine and the hull. If, for instance, the boat in question is a beamy, open, pleasure launch, not greatly exceeding twenty feet in length, and the owner desires a roomy cockpit, unencumbered by machinery, he will probably

install his single-cylinder motor as far aft as possible, perhaps protecting it beneath an after deck with sliding hatch to allow of convenient access. In such a case the boat must naturally be constructed with fairly full and deep after sections to afford the requisite amount of room. This will somewhat retard the boat's speed, but in boats of this class great speed is seldom required. The propeller shaft will be short as will also the exhaust piping, two incidental advantages of such an installation. The gasoline tank is usually placed forward in these cases and serves in a measure to counterbalance the weight of the engine. However, in such a boat the weight of the latter is not usually of much consequence in relation to the boats displacement.

A light, speedy runabout equipped with a motor of relatively great power is an entirely different proposition. In this case the boat is of light displacement and has her greatest draught at or near the bow. From this point her long, clean run rises in a fair sweep to the lower point of the transom which is usually just awash when the craft is at rest. Manifestly in such a boat, which is very flat and shallow aft, the motor must be placed amidships or forward in order to get it low enough in the boat to reduce the shaft angle to a reasonable degree. Amidships, too, is the location to be chosen for maximum seaworthiness, since heavy weights in the ends of a boat must always result in excessive plunging and erratic motion in troubled water.

In a cruising boat the cabin arrangement has much to do with the best location for the motor. Should the machine be located in the cabin it must be so placed that there will be sufficient room on either side to allow of passing it without difficulty when going forward, but it still should be sufficiently far aft so that the sleeping accommodations are not interfered with. A motor way forward is seldom desirable on account of the resulting

long shaft which must have extra spring-bearing to prevent whipping and also from the fact that the odors of gasoline, burned oil, etc., are carried aft into the living quarters when under way. Then, too, it is seldom that a small cruiser can be so advantageously divided up below with the engine forward as when planned with an after motor room.

In placing the engine, the under side of the flywheel must have room to just clear the bottom of the boat, while the bottom of the engine bed or, perhaps, the shaft coupling, must clear the keelson at the after end. These two governing points, fore and aft, together with the required passage way upon either side of the engine (unless the machine is placed way aft), are all that really restrict the amateur builder in his choice of a location. In boats of very small displacement with heavy power plants, however, it may be necessary to figure the center of buoyancy and place the engine as near that point as the design of the hull will allow.

The professional designer always gives much attention to the location of the motor as he proceeds with his drawings, in many instances, working out the design with the engine as its central and important feature. Such designs are far more apt to be successful than in cases where a boat is designed and built, regardless of the engine equipment and the latter is installed, perhaps at the eleventh hour, wherever the workman find it most convenient to locate it.

ALLAN O. GOULD.

Portland, Maine.

### By Making Model.

**I**F an amateur, in designing his own boat, has a model made to his lines, it will be an easy matter to find the proper location of engine. Make a shell of cloth stretched over model and treated with a coat of shellac; make this about three or four layers thick; run

a stiff wire around top to hold shape and remove. Divide weight of engine by scale, i. e., if scale is 1 in. to the ft., divide by 1728, fill a bag with shot to this weight found, set in shell and float; move bag until shell floats as desired, mark position and model and transfer to boat same as any other measurement.

As an amateur-built boat will be a pleasure rather than a speed boat and will probably be used for short cruises, it is best to place engine so that boat rides on an even keel when standing idle, as this will make it more comfortable than when engine and tanks are in both ends or both in one end of boat, in case the going becomes a bit rough and sloppy.

As it is a well-known fact that careful spreading out of weights will make even a poorly shaped boat very comfortable in bad weather and concentrating them will make the best modeled hull a bad sea boat, causing it to pitch and roll badly; an excellent idea is to divide the gasoline in four tanks, placing one in bow, one astern, and one on each side in center as far out to sides as possible; keep all near level with reference to each other and connect all together; take feed for engine from stern tank as this will be lowest when under way, caused by settling of stern. In this way no matter how much gas you have it will always be equally distributed over the boat.

Excellent tanks for this purpose are those used by plumbers for hot water; they can be got in many sizes. This idea may be worked out with all fittings, letting the ice-box balance the water cooler, etc. You will be surprised, as I was, at what a difference careful attention to these details will make in the behavior of your boat.

E. A., St. Louis, Mo.

### As Low As Possible.

THE amateur designer in ascertaining the position of the engine bed in his boat must take several things into consideration. The size, shape and style of hull, and ultimate use of the boat are important factors.

Assuming the boat is to be used for pleasure, she may be put into one of the two general classes, the speed boat or the cruiser class. Most of the speed boats of the displacement type at the present time have wide transom sterns and wedge-shape underbodies. In this style of boat the engine bed is usually placed just forward of amidships. This balances the boat when under way, so that she will give the least resistance to the water, the angle of which is about  $2\frac{1}{2}^\circ$ .

In any boat, however, the engine bed should be placed as low in the boat as possible. This

is in order to give the greatest amount of stability. In the cruiser the engine bed is generally placed about amidships, although it may be located farther forward or aft to allow for accommodations and easy accessibility, which are the main features in the cruiser. The bed should not be placed too far forward or aft unless the boat is well balanced. If placed too far aft in the compromise stern boat she will drag her stern down; if too far forward the bow will settle and make her unseaworthy. There is no hard and fast rule, therefore, as to the location of the engine bed, and the amateur must judge for himself as to how his boat will be weighted and place his engine accordingly.

C. W. VAN NESS, Brookline, Mass.

### Used His Judgment.

HAVING built the boat I obtained the engine I looked at the boat, and considered one or two things:

1. The probable water line of the boat.
2. The way I would seat the people.

3. The place where I could put the engine so as to keep the shaft in a horizontal position as far as possible. As the boat in question was a 20 ft. full torpedo stern shape I decided that the place for the engine was  $\frac{3}{4}$  length of boat from the bow, figuring that the people could sit aft of the engine and the man at the wheel in front. This, owing to the shape of the boat would balance and not let her nose "dig" in the water; at the same time it gave a nearly horizontal position for the propeller shaft. I installed the engine and tried it a few turns on the stocks and it ran fine, but when I put the boat in the water I had to line up the engine with the shaft again, owing to the boat taking a different shape in the water.

When I had the engine lined up and the people aboard I was within  $\frac{1}{2}$  of my estimated water mark.

My experience just given is in relation to a boat of the usual torpedo stern type. In placing an engine in any kind of boat, the build of the boat plays one of the most important parts. The amateur must use his own judgment as to what he intends to do with the boat, the number of people he will carry and where he will place them.

A very sharp pointed boat with a square, flat stern, and no flare at the bows, would drive her nose into the water if the engine and fuel tank were placed in the bows.

Again, with the engine at the after end of a fantail boat, with a full body at the bows, would "squat" on the water, and lose a good deal of speed by the "drag" in the water.

One thing must be born in mind. Always have the engine where you can get at it and work all around it. Wm. H. COUSINS.  
Renfrew, Ontario.

### By Experiment.

THERE are as many considerations as to where to locate your engine as there are engines and boats. The model of boat, speed, use to which boat is to be put, weight and speed of engine, are all very vital points, and a general answer seems almost impossible.

Generally speaking, for a speed boat the engine should be forward of amidship—for the small family launch or hacking boat the engine should be aft, and for the cruiser it should be amidship.

It should be forward in a speed boat, because at speed, the bow of a boat tends to rise and the stern to settle. By placing engine forward this tendency is counteracted, while at same time engine is in sight of pilot and more accessible, and shaft has less rake than it would have if further aft. The propeller of a speed boat is usually placed forward of transom, which in turn forces the placing of engine forward.

For a boat making not more than 10 miles an hour, the tendency to squat is not excessive, and by placing engine aft more room is left for passengers, the noise of engine is not so prominent, boat balances well with gasoline tank forward and passengers amidship—and there is no shaft tunnel for passengers to kick their toes against.

For a cruiser, amidship seems the best place. Engine can be better protected, will fit into cabin arrangements better, will lie at anchor better with weight amidship.

For the particular point in any of these positions that engine is to be placed, the amateur must find the trim of his boat either by calculation or experiment that is launching his boat and weighting. If possible, also, *tow the boat at speed, weighting it in several different places, noticing the trim, wake, etc.*

The space necessary to swing the flywheel without a too great rake to shaft may compel the placing of engine somewhat forward of spot dictated by interior arrangement, and the cabin arrangements may compel the placing of engine in some particular place.

As for protection from spray, some of the fishing dories seem to have motors which run equally well under water as over it, so this becomes rather a question of motors than of location.

R. V. HOWES.  
Rockaway Beach, N. Y.

## Lessons Learned from the Past Season.

What a Number of Readers Have Learned From Their Motor Boating Experiences.

The Changes in Next Season's Boats That Will Result From These Lessons.

THE PRIZE CONTEST—Answer to the Third Question in the September Issue.

### Plenty of Deck Room.

The Prize Winning Answer.

EXPERIENCE gained with two motor boats, radically differing as to design and motor installation, will lead me to make pronounced changes in my next boat.

My first boat was a twenty-five-footer with small hunting cabin and large open cockpit in the center of which the motor was installed. This arrangement gave a cool and comfortable little cabin and the motor, by reason of its position, was readily get-at-able in the event of trouble, but by the same reason it was always in the way, its noise, heat and smell made the cockpit far from comfortable, especially on a hot day, and, besides, it was exposed to the weather.

Having sold this boat and relying upon the experience thus gained, I had built a 32-foot raised deck cruiser with cabin forward,

aft of this an engine room, containing toilet, galley, and engine, the latter being installed at the after end of this cabin, against the bulkhead, with reverse gear under the cockpit floor. The self-bailing cockpit was 7 feet long with entrance to cabins from forward end. A two weeks' cruise showed the following defects in design and motor installation.

1. The engine, while protected from the weather, was so installed as not to be accessible in case of an emergency.

2. It was directly in the way when one entered or left the cabin or engine room.

3. The only outside accommodations on this 32-foot boat was the space provided by a 7-foot cockpit; and the remaining 25 feet of deck could not be used for lounging, eating or sleeping, either when under way or at anchor.

Experience gained from these two boats has taught me that at least three-fourths of the

time spent on a boat is spent literally on and not in it. Of course, certain weather conditions make a cabin a necessity, such as rainy weather, but in nine case out of ten anchorage is made in quiet water and there are few nights when one is not better off sleeping on deck than in a close cabin.

My next boat will therefore have plenty of deck room, forward as well as aft, and also amidships, even if head room in the cabin is sacrificed.

My experience with my last boat has also shown me the folly of so installing an engine that it is not accessible as to all its parts in the event of a break down.

My motto—a beamy boat, of good draft and freeboard—plenty of deck room for lounging, eating and sleeping—a reliable engine, so installed as to be out of the way, yet easily get-at-able under all conditions.

H. P. W., New York City.



### Use Small Enough Wheel.

**M**Y very first change will be to provide whistle, lights, etc., as called for by Uncle Sam's new laws. It is unsafe in more ways than one to fail to provide these devices. The fewer who fail to obey these laws the greater risk they run.

Next I will provide myself with a suitable reversing propeller. No more depending on reversing the engine for me, as I find from experience that one runs too great a risk of smashing the boat or running another boat down, to warrant the small saving in cash. It makes me feel mighty cheap to fool around reversing the engine when the other fellow runs up to me and reverses with his wheel and then runs rings around me backwards.

My short experience has taught me to let a motor built to develop 6 h.p. at 800 r.p.m. run at such speed. It sounds fine to say you can turn a 16 in., 3-blade wheel, but what's the use when you can get a 14 in., 2-blade cheaper and it will let your motor run at 800 where it should and not hold it down to 600. A 16 in. wheel with a 22 in. pitch will only give me a little over 9 miles while a 14 in. wheel with a 20 in. pitch will give me 10½ miles.

For a 20 x 4½ ft. open launch of medium construction I believe my motor to be about right, although it was only after a long debate that I decided in favor of a 6 h.p. at 800 r.p.m. The other motor was a 3 h.p. developing at 400 r.p.m., but I am satisfied with my choice and glad I decided as I did, as otherwise I would have made a change in my motor next spring.

B. C. S., Grand Rapids, Mich.

### Several Wrinkles.

**H**ATCH in Stern Deck. A hole 8x10 inches cut in stern deck, covered with a watertight lid, is a great convenience. Extreme end should be directly above rudder post, thus all of your steering gear is in plain view, and above all, accessible. If your rudder lines happen to break or get jammed, you can reach through hole and grasp the quadrant and steer until you have an opportunity to fix it.

If muffler is under aft deck, leave lid off altogether, when under way, or prop it up so that the end is about four inches above deck. The air rushing past creates a suction, and draws out the hot air. You will find air under deck barely warm, instead of feeling like a miniature volcano. For storing things away under after deck, it is also very handy.

Starting a 2-Cylinder on Compression. Get two 3-inch pieces of ¼ copper wire; attach one end of one wire to the ground wire terminal on timer, and bend loose end up, so as to be ¼ inch away from primary wire connection on timer. The other wire should be inserted between nut (holding timer to cylinder) and timer arm; bend this wire up so end comes up to the other primary wire connection. After engine has once been warmed up, it should not fail to start, provided you have fairly good compression.

Just push in the switch, and press, first one of the copper wires against primary wire connection. If no explosion results, then press opposite wire and that is bound to do it.

Plug Umbrella. A 3-inch hollow rubber ball, cut in half with holes cut in it to admit plug wires, will keep your plug connections dry. Make a hole a trifle smaller than plug wires, it will stretch and hug tight when on. Cut wire holes in rubber ball, so that it hangs fairly level. Have best rubber insulated wires, and with this hood, you will have no trouble with spray.

Mixture for Bilge. Sawdust mixed with Asphaltum makes a fine covering for bilge. Hardware stores sell it for 45 cents the gallon. Add Asphaltum until mixture is of pasty nature (not too wet), then smooth out in bilge. My bilge is covered, from about waterline down, the thickness of the ribs, and she doesn't leak a drop. When set (in

about a day) it has a sort of elasticity, and will not easily break or crack from vibration.

Cut Out on Exhaust Pipe. Get an automatic cut-out (with clamp attachment complete; it costs \$1.50 at any auto shop). Take a hacksaw, and about a foot from manifold, saw across top side of exhaust pipe, the size hole in cut-out; chip the rest out with a cold chisel. Put on asbestos gasket between pipe and cut-out, and clamp it fast. To tune up your mixture it's ideal, especially if having an underwater exhaust. When only a faint vapor comes out, I find it gives best power.

H. Von, Reading, Pa.

### Guard Against Fire.

**I** CONSIDER that one thing, so well learned that you can make use of your knowledge, is far better than a smattering so poorly assimilated that you can't apply it. So, although I have notes in my log that will lead me to make many little changes next season, one lesson was so—well, almost burned into me, that I will tell you about it, in the hope that, even second-hand, it will be the means of saving some one from loss.

Last week I went out in a beautiful 42-foot cruiser. A new carburetor had been put on, and, when making connections, or in drawing gas for priming, some was probably spilled into the bilge. There was the usual amount of water in the bilge, and, also, as usual, it was covered with a liberal coat of lubricating oil. I was forward at the wheel, and had just remarked to the owner on the noiseless running of the engine, when the third member of the party, who was in the engine room, shouted: "She's afire!"

We rushed aft, and saw flames shooting up from the (alas, usual) hole in the flooring in which the carburetor was set. "Where's your fire extinguishers?" I shouted, as the owner rushed to the stern and, ripping open a cubby-hole, drove in head first to shut off the gas at the tank. He was too excited to be more explicit than: "In the engine room," but by the time I was there, he was beside me, tearing at a tube of powder hanging in a corner. But it was too well fastened in place, and valuable time was lost getting a tool with which to wrench it free. The powder was thrown down into the hole and around the clutch, and when the last was gone, we stuffed pillows and anything we could lay hands on, into every hole where they would shut off air. But the floating oil was well afire, the whole bilge was ablaze, and in ten minutes the entire boat was wrapped in flames. There wasn't an axe or other tool aboard that we could have scuttled her with. There was only one lone tube of powder, and, even if water would have quenched the flames, there wasn't a single bucket on board. And, when we were at last ashore, thankful for our lives, the man, who, but a short time before, had proudly taken us out, almost sobbed; "And I didn't have a cent of insurance."

I hope that this will set you all to thinking and planning for next year. I hope that the reading will do you one-millionth as much good as the experience did me.

I'm going to build into my boat a 20-gallon liquid extinguisher, with a three-quarter inch hose to the engine room and one to the galley. It will have a plunger that can be operated from the deck, or the engine room. Then, if I should have a fire to fight, I will have carbonic acid gas, in which the fiercest gasoline blaze is helpless, I will have plenty of it, and it will have sufficient pressure to carry it the entire length of the boat, or into the most remote cranny of the bilge.

F. P. E., Noroton Heights, Ct.

### A Few Lessons Learned.

**T**HIS season's experience in connection with a 22 x 4 ft. 6 in. open boat taught me the value of a substantial hull with sufficient flare to turn some of the spray and

me to line up my power plant after launching and to have an extra long, well fastened engine bed.

I learned the worth of boxing a dozen dry cells, wiring them in four series, three multiple carefully separating terminals and embedding all in paraffine. Try it and run your boat all summer and your house bells all winter. I found that a magneto is more certain to run if removed from boat after each trip. Rain and bilge water sent mine to the shop.

The air pressure gasoline system every time. An air gauge, a stopcock and a small pump are all that are necessary. It requires only one or two pounds pressure to force the juice along and a little more will readily clear pipes of dirt. A good float carburetor will hold the gasoline and no auxiliary tank is necessary. You know our friend and his blazing matches may mean "swim or burn" for some of us, so I recommend steel tanks.

I am convinced that lubrication through the gasoline system is a clean and efficient method. Yet don't remove your oil cups because now and again a little extra oil can do no harm.

I loath the outboard stuffing box, it is always out of reach and should be frequently inspected. I advise an oil or grease cup on this necessity, as well as having it inboard where it can be seen. I am sure a small power bilge pump, with inlet well protected with fine screen will prove its value. And I am equally in love with calking cotton soaked with shellac to plug a bad hole.

The underwater exhaust may cost a little, but surely it is worth its cost in the quiet resulting. Why, oh why, this ear-splitting noise?

Dr. L. H. P., Philadelphia, Pa.

### Regarding a 25-Footer.

**W**HAT has this year's cruising taught me in regard to changes desirable in my boat? Several things of more or less importance. To begin with, I have a 25 x 7 foot raised deck boat with 10 foot cabin, 5 h.p. Mianus motor under hatch in water-tight cockpit, turning 18 x 24 in. wheel 500 r.p.m. making 7 real miles with and against tide.

The first change I shall make will be the installation of an inside stuffing box. Either vibration, caused by long shaft, or some other reason, has caused the packing to work out three times (each time packed by different person) with the attendant trouble of hauling out to repack. An inside box will save this trouble, even if it has to be repacked.

Another thing I learned, and quickly, too, that an uncovered cockpit is a delusion, and a few hot days caused me to have erected a frame of bent pipe with wooden laterals, over which I laced light canvas. This winter I shall have tight side and end curtains fitted for night comfort in cruising as well as on stormy days. A small celluloid window will enable the steersman to see ahead.

My fuel tank is high up in the bow and piped under the cabin floor. While I have had no trouble, the sound of gasoline swashing around has been unpleasant. Next year the gasoline tanks go under the cockpit floor, and the room will be used partially for a water tank, which will give me running water to a faucet, and also to extend the clothes locker to the cabin top, making it high enough to hang clothes full length.

The only ventilation now to the cabin is by means of a flat removable hatch about 10 x 15 in. This is not large enough. Next season it will be enlarged and lifted at the forward end to catch the breeze and send it below.

As for equipment, an additional heavy anchor (40 lbs.) will ease my mind when anchored in a rough spot; electric side and headlights look good to me, and the thought of the possibility of my one cylinder going bad (it never has) in the rough waters of lower Narragansett Bay, has led me to believe I will double up on cylinders next season.

CHAS. W. KIDDER, Taunton, Mass.

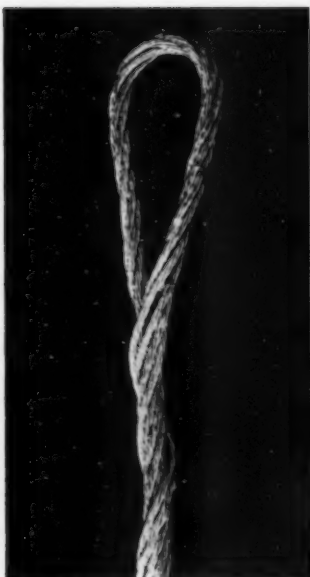


Fig. 1.—Fake splice, first method.

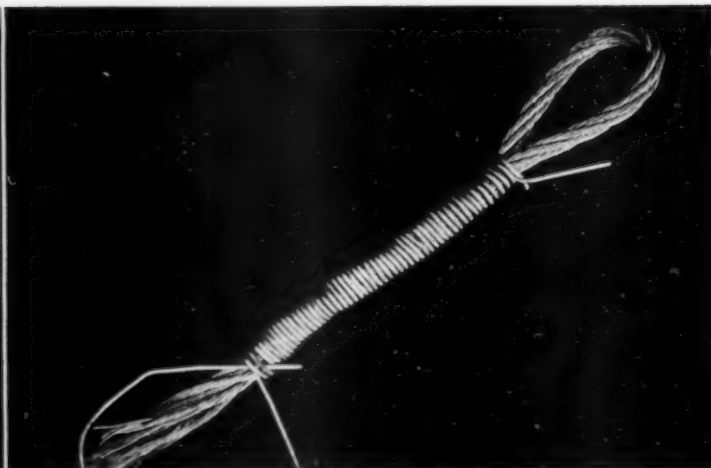


Fig. 2.—Fake eye-splice served with galvanized wire.



Fig. 3.—Splice, completely served.

## Working Wire Rope.

How to Make the Eye-Splice, The Only One of Interest to the Motor Boatman.  
A Simple Matter Usually Avoided by the Amateur.

By W. E. Partridge.

Photographs by Levick.

IN these days standing rigging is almost always of wire, and motor boats quite generally have signal masts, so that with wire tiller ropes the motor boatman finds he has quite a little wire rope to look after. Not much knowledge is needed to handle it but that knowledge is, like the plainsman's pistol, not often needed, but when it is, "it's needed bad." It is very convenient to know how to fit the motor boat's simple rigging without having to wait for a professional.

It is possible to buy screw clamps for making eyes, but they are awkward affairs, and the fellow who likes things shipshape and neat is very much ashamed of such fittings. Most people are afraid of wire rope. It looks so hard and stubborn. Sailors were formerly afraid of it, and amateurs look cross-eyed when one suggests doing anything with it.

The only work that the motor boatman is ever called upon to do with it is to make an eye splice. This is a very simple matter for one who knows anything about handling ordinary rope. It is also greatly simplified by the fact that there are many ways of making eyes in wire, and even the weakest of them will be found amply strong for the common strains to which they are subjected in motor boat service. They are probably quite as secure as clamps, which under heavy strain cut the strands and cause the rope to yield at a fraction of its actual strength. It is also true that all eye splices "look alike" to the ordinary observer. One of the poorest "looks" just as well as one of the genuine made by an experienced hand.

One thing must be understood in advance. One cannot do anything with wire rope having only one's teeth and fingers to work with. The motor boatman is rarely interested in wire ropes larger than  $\frac{1}{4}$  or  $\frac{5}{16}$  inch, and that is about as large as can be handled without a rigger's 3-joint vise, which is rather too costly an affair to put into the motor boatman's shop.

The tools that are really needed are: First, a pair of pliers, double leverage, if possible, about six inches long at least, no harm if longer; a

small pair of plain pliers is of advantage, but not absolutely necessary; one pair should be furnished with wire cutters or else a separate wire cutter must be provided; a carpenter's scratch awl or something pointed which grows larger toward the handle. One of the round shanked screw-drivers might answer at a pinch. The proper tool, of course, is the iron marlin spike, but substitutes will answer if they are of metal. A fid, a marlin spike of wood on a large scale, won't "cut any ice" in handling wire.

In addition to tools some material will be needed. This will be: First, some "yacht marlin"; second, some copper wire, say No. 16 or 18, or galvanized iron wire of about the same size, the softer and tougher the wire the better; third, galvanized thimbles of a size to suit the rope, to put inside the eyes. This is important as an eye in a wire rope without a thimble is of little use, as the eye is quickly put out of service by wear and strain.

The use of the marlin is to serve the splice after the eye is made. The friction thus obtained makes the eyes secure. The wire is used for the same purpose, though it is more difficult to put on. The service must on no account be omitted. It protects the splice

and makes it secure besides giving a neat, finished appearance. Without it even the best splice in wire would be very weak.

When one looks over a list of the kinds of wire rope and their sizes, it is enough to make his head swim. It is not something that anyone can master in a few years. To order common "quarter inch galvanized wire rope" will probably bring what is wanted. It is hardly worth while being persuaded to buy phosphor bronze tiller rope or the bronze rope for rigging, it costs somewhat more per foot and is more of a temptation to the long-shore loafer who examines your boat to see what there is in it for him.

All common wire ropes are made with a soft center. Sometimes this is hemp and in other cases it is cotton. Tiller rope is supposed to have a hemp or cotton center to make it more flexible. Wire rope is made up in a variety of ways, the strands are composed of large wires or small, with and without hemp cores. The price lists show solid wire ropes, ropes with cores, cores in strands, strands with 7, 12, 19 and 37 wires in endless combinations. There are more sizes, kinds, variations and special wires than there are kinds of motors. And where the author went to buy a couple

of fathoms to make his illustrations from he got hold of a piece that isn't shown in the lists at all; nobody seems to know what it is. It's good rope all right, and that's the end of it. The moral is that nobody knows all there is to wire rope. The probability seems to be that when the machine tender isn't looking the machine goes ahead and makes something "out of its own head," not like anything that was ever seen before. For the rank outsider there is no use trying to understand these things. If you are buying, tell the man you want a piece of wire rope, the length you want and what it is for and the size. If you are going to work it yourself you want it flexible, and it must be pretty small. However, if you have a vise and strong arms and a good marlin spike you may be able to look at



Fig. 4.—Serving the eye-splice with wire without the aid of a vise.



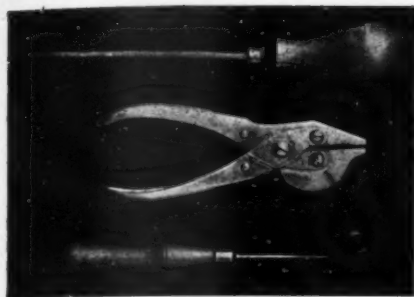


Fig. 5.—Tools needed for handling small wire rope.

half-inch or even five-eighths without blushing.

Whether there are five wires or nineteen per strand, or whether five or six, or eight strands, the fine wires will bite chips out of your fingers cheerfully, and as promptly as a buzz saw. Likewise those same wires will bore holes in any exposed portion of your anatomy. All of which instills a profound respect for the work in hand.

#### AN IMITATION EYE SPLICE.

There are many places, and where there are no great strains, where an imitation splice will answer just as well as the real article. The bogus splice is especially useful in overcoming the boatman's natural timidity in facing a bit of wire.

First, if you don't happen to have a thimble, determine the size of the eye you wish to make. This is settled by the size of pin it must go over or the size of the rope which is to go through it. Standard thimbles for the smallest ropes are about  $1\frac{1}{2}$  inch by  $\frac{3}{4}$ . This is a very good size for  $\frac{3}{16}$  and  $\frac{1}{4}$  inch rope. Unlay the strands for seven inches or more. Cut off the hemp or cotton core at the point to which the strands are unlaid. Then form the eye and wind the strands in the scores around the standing part of the rope. It is well to put a tie of wire or a bit of string about the rope at the point where the parts come together. When all the strands are wrapped about the body of the rope it will have something the appearance of Fig. 1.

The next step is to serve the splice, that is to wind wire or small rope tightly about the strands so as to hold them in place and prevent them from slipping. The turns of wire must be laid tight and must touch each other the

whole length of the unlaid strands. If marlin is used it must be hauled taut at every turn. When the ends of the strands are reached the work must be continued back to the eye; the second lay of cord is what is called the "riding" turns. These must be laid just as carefully and drawn just as tightly as the first layer. The strength of this eye depends almost entirely on the way this serving is done. If it is tight and even, the eye may be good for a pull equal to nearly half the working strength of the rope. When finished, if the serving be neatly done, the eye will be as handsome as though it were a genuine splice. See Fig. 3.

If a splice in  $\frac{3}{16}$  inch rope is covered (served) with wire  $\frac{1}{16}$  of an inch in diameter, 14 feet of the wire will be needed for the first service, and the riding turns back to the point of starting.

Fig. 2 shows the fake eye splice served with wire but without riding turns. The end of the wire is shown tucked under the last two turns ready to be pulled through, taking up the loop and making all secure. If riding turns are put on, as in Fig. 3, the end of the wire will come at the eye where it can be made fast around one part of the eye. It is started by making a small loop in the wire, passing the end about one part of the eye and putting the end of the wire through the loop.

When one is working without a vise of any kind, it is necessary to use the hands to put a strain on the serving, as shown in Fig. 4, where the wire comes through the body of the plyers and out through the groove in the center of the jaws.

In Fig. 6 is another form of fake eye splice not to be dispised by any means. The eye is found as before but each strand is unlaid and the wires are evenly spread about the standing part of the rope, and secured by twisting a piece of wire about both parts at the point of the eye, and with another piece of wire near the ends of the wire of the strands. Now take a piece of "yacht marlin," make a small eye in one end and with the eye fasten the end of the marlin about one of the parts of the rope below the thimble. Then proceed to serve the loose wires firmly upon the rope. When the wires are covered put on riding turns back to the starting point. If the service has been well put on, covering six or seven inches (see Fig. 8), the eye will pass muster with most people and stand as much strain as ordinarily will be met with.

In these splices the serving has begun at the eye and gone toward the ends of the strands. This is the only practicable way to serve splices of this kind, for the ends of the wires being free the eye would be opened if one began

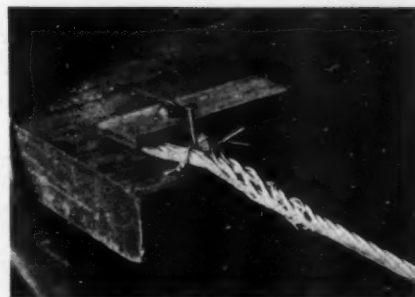


Fig. 9.—Method of fastening rope while working.

at the end and so drove the "slack" toward the eye. The expert will laugh at these fakes but they are especially valuable for the beginner because they make him familiar with the handling of wire, overcoming the natural fear which one has of such a stubborn material.

#### A REAL EYE SPLICE.

After one has handled wire rope to the extent of making a couple of fake eyes, several interesting things will have been discovered and one's interest in wire rope greatly increased. Wire rope is much more flexible than one at first supposed. The strands stay where they are put. They don't unlay or ravel, like hemp or manila. When a strand is lifted by the marline spike it stays up in place and there is no difficulty in putting another strand under it. In a word it is somewhat stiffer to begin with but much easier to handle than hemp or another fibre rope, except in so far as greater strength is needed in pulling strands tight, and much of that can be avoided by a judicious use of the hammer. Strands must be left longer for handling and more attention must be paid to putting on temporary seizings, if one is working without the advantage of a rigger's vise.

The amateur can, if he is pretty sure of himself on eye splices, undertake  $\frac{3}{4}$  wire and perhaps  $\frac{1}{2}$  inch tiller rope. To begin, bind the rope at the point where you wish the crown of the eye. Then put the thimble into the bind, and taking a piece of pretty strong wire fasten the thimble into the bind of the rope. See Fig. 7. Now bind the rope so that it forms a complete eye and wire the two parts to the thimble. If the wire is stout the twist that can be given will bring the parts together,



Fig. 6.—Fake eye-splice, second method. All strands unlaid and wires gathered about standing part of rope for serving.

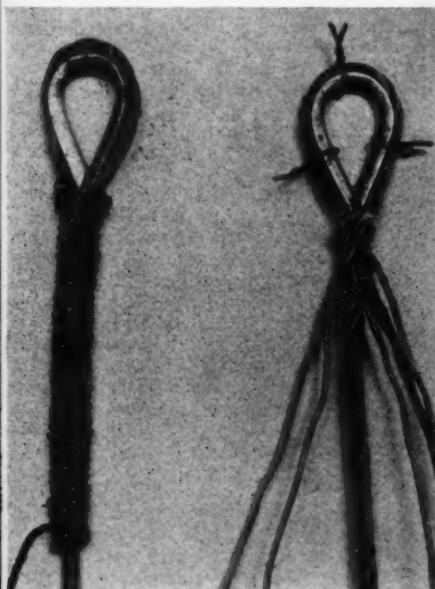


Fig. 8.—The second stage of the real splice and the finished splice served with yacht marlin.

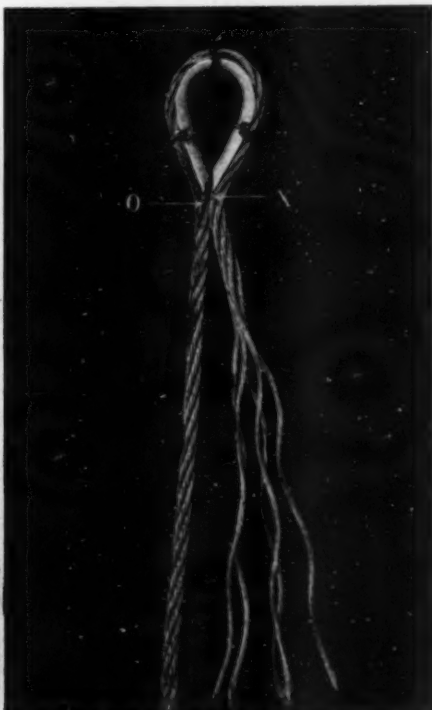


Fig. 7.—The start of a real eye-splice. Strand X passes over strand O and is "stuck" under it from left to right.

though the rope may be quite stiff. This, in fact, takes the place of the rigger's vise. By making good use of the plyers in twisting the parts together surprisingly stiff rope may be handled. The position of these ties can be seen in Figs. 7 and 8. Now if it is possible to put the eye into a vise, or jam it over a pin so that it will be held firmly, the beginner may be able to make an eye in rope as heavy as half an inch. See Fig. 9.

Turn the rope so as to bring the strands as in Fig. 7, then bring strand X over strand O and tuck the end back toward the right. After this strand has been passed, or "stuck," as the sailors say, the others follow in the regular order. When they have all been passed in the regular way four or five times, the next thing is to take a hammer and bring the splice down to its proper shape. I say pass the strands a number of times in order to make sure. The hammering down does what rolling under foot does for a hemp rope splice. It brings the strands down to a solid body, closes any

openings and makes it ready for the serving.

To serve use "yacht marlin," which is finer and neater than the ordinary kind. Make an eye in the end by splicing. This way puzzles a beginner because marlin is two-stranded stuff. The splice is made by sticking one strand against the lay, then the remainder of the work is natural. When finished, the eyes passed through the thimble, the end of the marlin passed through it around one part of the eye, or if a ball of marlin is used the end is passed through the eye of the wire rope and the eye of the marlin made about itself. Fig. 8 shows an eye splice served with marlin.

While it is best for the beginner to tuck the strands four, five or even six times full size, after some experience one is ready to do the work properly. Tuck twice full size, then cut out one-half of the wires of each strand and tuck once, cut out half of the remaining wires and tuck again. Now unlay the wires of each strand and turn them back along the body of the splice. The wires of one strand

are left long, half or more the length of the splice, the next are cut shorter and the third still shorter. They are carefully hammered down so as to make a smooth, neat surface. If we serve with wire, the wire is laid from the eye to the end of the splice where the serving is begun and laid on top of the wire. When the eye is reached the two ends of the wire are twisted together and hammered down. When made in this way the eye splice is stronger than the rope. Wire serving is held by some to be better than marlin because stronger and because it permits water to run through instead of holding it in.

In sticking a strand, open the rope by twisting against the lay and working the marline spike along the strands, not by simply forcing a strand up at one point.

Fig. 8 shows a finished splice served with marlin. It will answer for any of the forms of splices described. When finished they are all so much alike that only an expert can tell one from another.

## A Simple Substitute for the Sextant.

An Instrument from which Distances may be read off Directly without the Necessity of Calculation.  
How This Useful Little Device may be Made by the Amateur.

By H. H. Brown.

PROBABLY the average yachtsman when he hears a sextant mentioned thinks of an instrument for taking an observation of the sun or some other heavenly body for finding one's position at sea while out of sight of land. If this were the sole use of the sextant, or its various modifications, it would be of very little use for the average yachtsman, as he is seldom out of sight of land except in a fog and then he cannot take an observation of the sun or other heavenly body. However, this use of the sextant is by no means the only one made of it by a good navigator. One use is to find the distance from some landmark on shore, as, for instance, a lighthouse, whose height above the sea or above the ground is shown. Thus by taking the angle subtended by the lighthouse it is a comparatively simple problem in trigonometry to find the distance from the lighthouse to the observer. However, this takes time, and some years ago Commander Bradley A. Fiske of the U. S. N. invented a very simple modification of the sextant known as a stadimeter, which was so designed that when the known height was set off on one portion of the instrument if it were then sighted on the object and the angle ascertained the distance could be then read off directly in yards without any calculation whatsoever. Let us suppose that we set a masthead height of 12 feet and take an observation which shows that a boat is 1,000 yards away and that just one minute later we take another observation and

find that she is now only 950 yards distant. We can then feel reasonably sure that if a uniform rate of speed has been maintained that in twenty minutes from the first observation that we will overtake the boat ahead. The fact that we have made a miscalculation in the masthead height will not make any difference in the time taken to overhaul the boat, as a little reflection will show.

The instrument invented by Commander Fiske is a little beyond the average yachtsman's constructive skill. However, the fol-

lowing simple device is offered as a substitute. It consists of a plate of sheet brass about 1/16 inch thick, about two inches wide and one foot long, having a triangular slot cut in it one inch wide and ten inches long. Above this is a line graduated in multiplying factors. Sliding upon this plate is a cross plate which is furnished with guides which keeps a sighting slit always perpendicular to the axis of the triangular slot.

In the left-hand side of this plate is bored a small hole through which a string which has a button on its end passes. The length of this string has to be determined by experiment; however, it is about twenty-five inches long. To use the instrument this button is placed in the mouth between the teeth and the cross plate held in the left hand at the full extension of the string. With the right eye one now sights at the object and with the right hand the long plate is slid in the cross plate until the top and bottom of the slot just coincide with the top and bottom of the object sighted.

The multiplying factor which is directly above the sighting slot is read and by multiplying the known height of the object sighted by this factor the distance is easily found. In most cases this can be done mentally with sufficient accuracy.

The sketches of the device are almost self-explanatory. The only points which will need

explanation are the method of graduation and adjustment. It will be seen that the slot in the long plate, Fig. 1, has a triangular portion ten inches long and one inch wide at its base. For the sake of easy adjustment the slot is continued for about one-fourth of an inch with the sides parallel. A line AB perpendicular with the base of the triangular portion of the slot is drawn on which the graduations are marked. It is assumed that the point B ten inches from A will give a factor of 25. The distance of the factors from A will be inversely proportioned to their magnitude. Assuming, then, a factor of twenty-five, ten inches from A to find the distance from A of any other graduation, divide 250 by the factor whose position on AB is sought; the quotient will be the distance in inches

from A. For instance, to find the position of the factor fifty, dividing 250 by 50 gives us 5, its position is therefore 5 inches from A. Take, for instance, 75; 250 divided by 75 gives 3.67. The position of the factor 75 is therefore 3.67 inches from A. It is well to figure the position of all integral graduations from 25 to 35, from this point up to one hundred by fives and from one hundred up to two hundred by twenty-fives. If one is possessed of a slide rule the easiest way to figure this is by inverting the slide.

The cross plate, Fig. 2, like the long plate, Fig. 1, is also made from 1/16 sheet brass. Soldered to the back of the same or riveted

(Continued on page 48.)

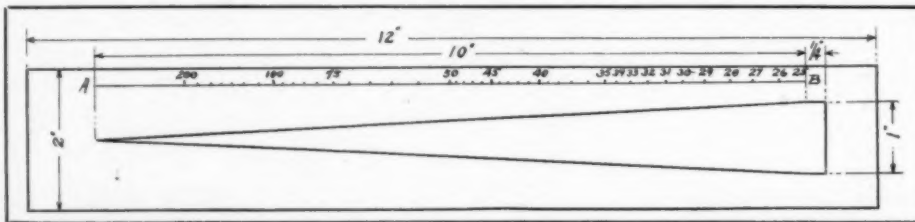


Fig. 1.—The long plate is made of a strip of sheet brass one-sixteenth of an inch thick.

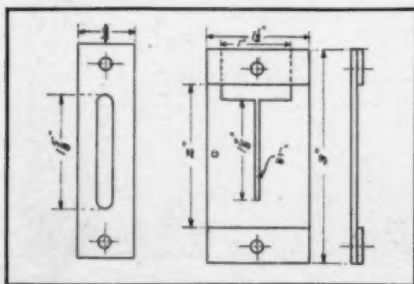


Fig. 2.—The rider and back plate.

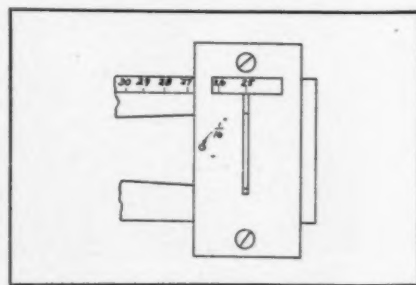


Fig. 3.—The rider in place on scale.



# Talks With Our Naval Architects.

J. Murray Watts.

**J.** MURRAY WATTS was graduated from the Scientific School at Yale in 1900, receiving the degree of S.B. in naval architecture, and, as a self-imposed post-graduate course, spent several months studying the methods of hull construction and yacht designing in foreign shipyards. Upon his return to this country he went to work in the hull department at Cramp's Shipyard, on the Delaware River, and after that spent a year in the designing office of the New York Shipbuilding Company at Camden.

Mr. Watts' hobby has always been ocean-going cruisers, whether steam or gasoline, and he got his first real chance to put his hobby into play when he took the place of Mr. Page in the firm of Swasey, Raymond & Page. After five years he left the firm to take the position of naval architect with a shipbuilding concern in Boston. In the early part of 1909 he returned to his home town of Philadelphia and formed a partnership with Thomas D. Bowes. One of the small sea-going cruisers lately turned out by the firm is the *Caliph*, shown below. She was designed as a comfortable shoal draft cruiser for use along the New Jersey coast, but her first long trip was made as one of the contestants in the Havana race. She has proved a good sea boat, and arrived first of a fleet of five starters, although she lost out on time allowance.

From the time of the second Marblehead race when he designed *Unome*, which came in first, he has followed the ocean racing proposition with more vigor as it grows gradually larger and more interesting. His principal point of interest just now is the possibility of designing and building a racer to enter the proposed contest from Havre to New York. When asked at his office as to

what is the most interesting problem in the motor boat world at present, he replied: "One of the most interesting problems put up to the designer this year is that of getting out a trans-

model similar to *Dielta*, 114 feet long, 18 feet beam, with two 75-h.p. motors of four cylinders, running at 350 R. P. M. With such an equipment she could be driven at a sea speed

of about 8 knots. Twin screws are imperative, as there are times on such a run that it would be advisable to stop one of the engines while keeping the vessel on her course with the other.

"Of course, one of the most important things on such a long race is the manner in which the crew is housed. They must drive the boat for at least 17 days without letting up, and comfortable quarters for them will ensure a happy ship and the hardest driven one.

"To my mind a trans-Atlantic racer should be flush deck, with bulwarks and a flying bridge steamship fashion over a small chart house fitted with round ports. All hatches should be extra heavy and should be carried up well above deck.

"The problem of sufficient fuel is decidedly the most difficult in this case. Gasoline is not practical, both on account of the danger of carrying such a large quantity and the price, which is 40 centimes a litre in France. The alternative is to use a producer plant or fuel oil and a converter. There is a converter made which will volatilize heavy waste oil which costs but 2½ cents a gallon.

"Fully 6,000 gallons must be carried on a trip of this sort, and this should be stored in steel tanks, riveted and welded by the autogenous process, and built into the structure of the boat.

These tanks should be fitted to drain overboard, so that in case of rupture by collision the fuel would not leak into the bilge. A racer of this type should be rigged with a pole mast, with gaff-headed trysails, staysails and square foresail.

"For this trans-Atlantic work, 90 feet of over all length is about the smallest size practicable."



J. Murray Watts, Naval Architect.

Atlantic racer for the race from France next year."

Mr. Watts has his own ideas as to the kind of racer most desirable for such a contest and some of them are as follows:

"The best type of boat for this long race is that of a steamship



*Caliph*, the 60-foot Havana racer, was one of the last boats designed by the firm of Bowes and Watts, of which Mr. Watts was a member.

# New Motor Boat Designs.

**T**HE design which appears below is one of the latest, by Messrs. Gielow and Orr, of New York City, and a boat is being built to them for Mr. F. A. Hyde, of Oakland, Cal.

The design is a combination of the raised deck and trunk cabin types, the sides being carried up only far enough to insure sufficient head room along the transoms and lockers when seated. Full head room is provided for by means of a cabin trunk. This arrangement gives a longer and lower appearance to the boat and also better lighting than is possible in the usual raised deck type.

The principle dimensions are: Length over all, 36 ft.; length on the waterline, 35 ft.; beam, 8 ft. 6 in.; and draft, 3 ft.

The interior arrangement is very simple. The water tank is located in the eyes, forward of the collision bulkhead, and, just aft of this is the toilet and dressing room. Next aft

## Pilgrim-A New 36-Footer.

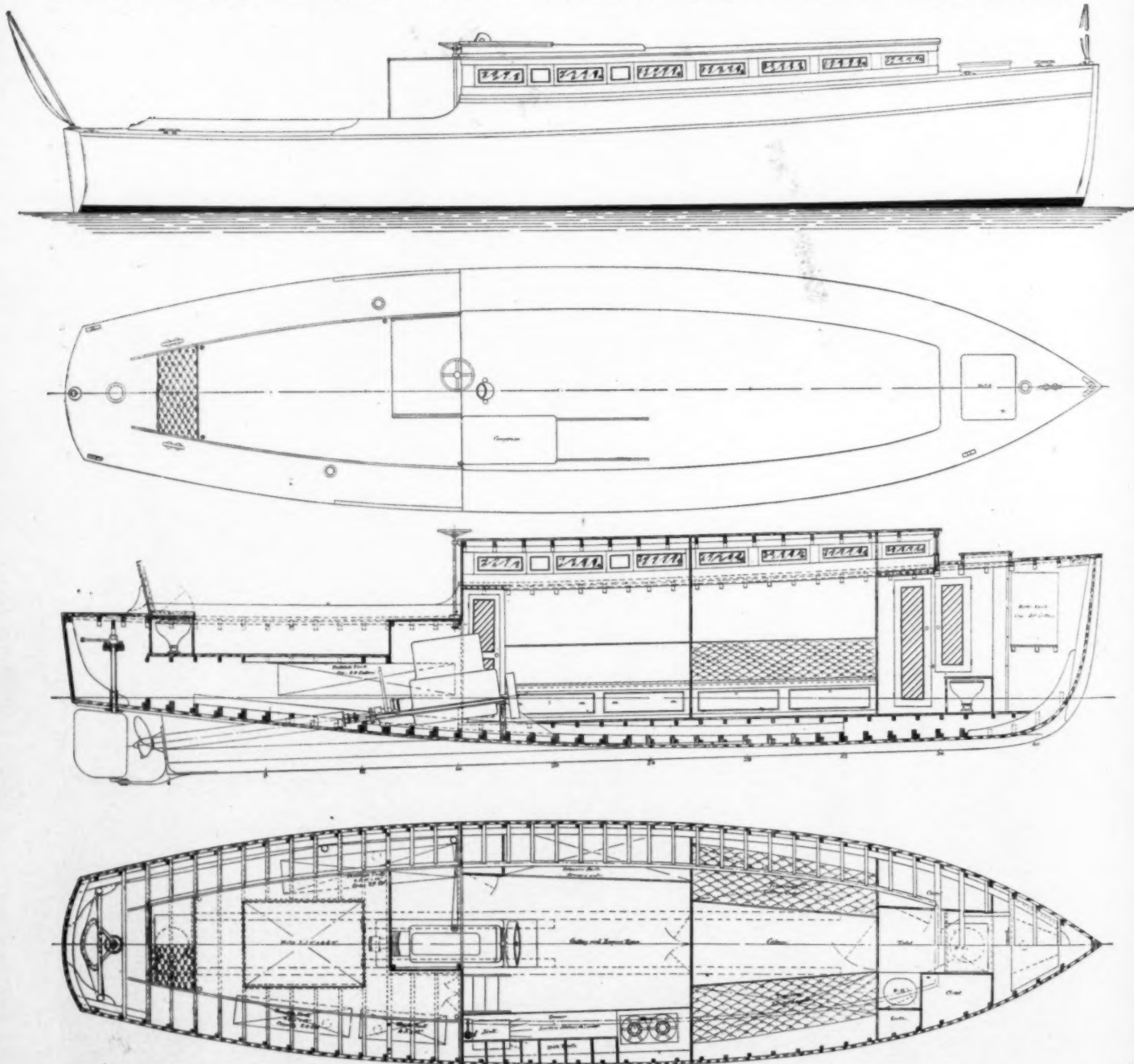
comes the cabin which contains two berths; and amidships is located an exceptionally large engine room and galley. On the port side of this compartment is an extension berth and on the starboard side the oil stove, a locker, shelves, sink, etc. Aft of this is a long cockpit with raised bridge across the forward end upon which are located the steering wheel and controls for the motor. As will be seen from the plan the seat across the after end of the cockpit contains beneath it a rather unusual feature which is explained by the fact that the cockpit is used as a state-room.

The boat is being constructed in a thoroughly substantial manner, using the native wood of the Pacific coast excepting for the interior finish, which is in polished mahogany throughout.

The motor is a 4 cyl., 20 h.p. Ralaco which

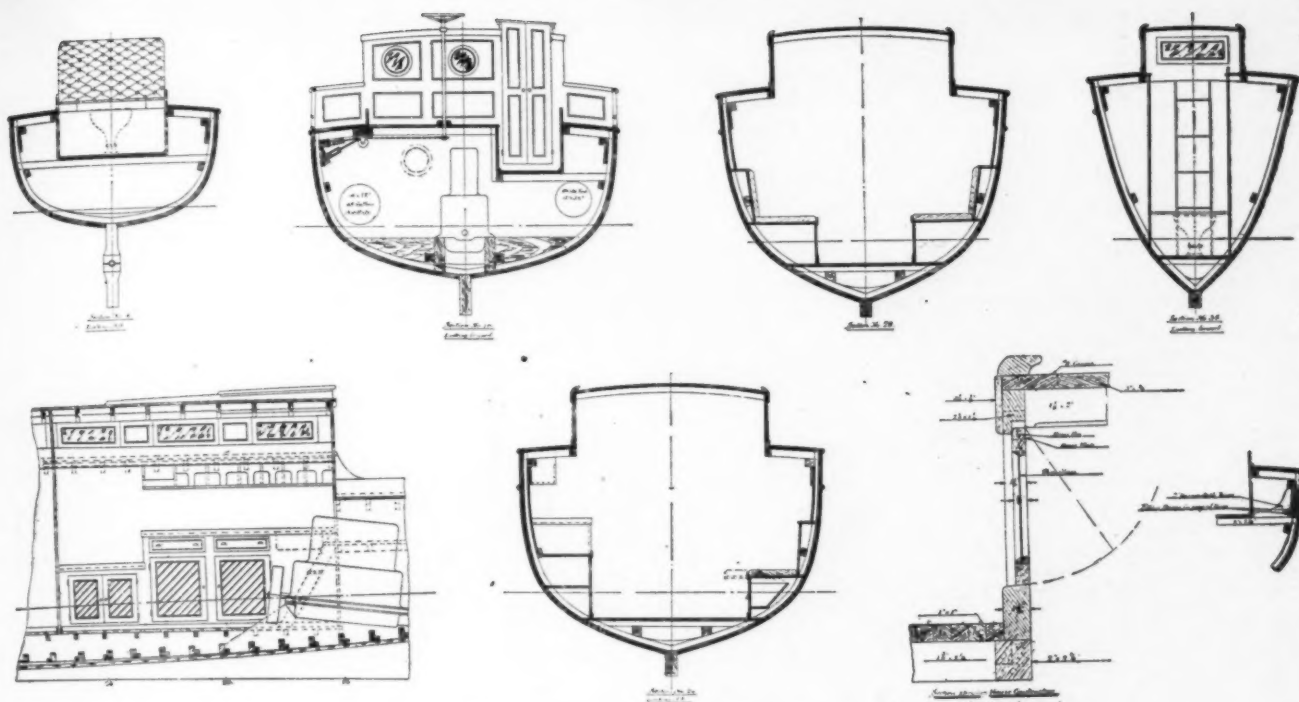
will give the boat a speed of over 10 miles per hour. The fuel installation is exceptional. There are two cylindrical tanks, one with a capacity of 44 gallons and the other of 24 gallons capacity. The larger tank is used for holding distillate and the smaller one gasoline, the gasoline being used for starting and running the motor for a short time, after which the distillate is turned on.

The motor is installed somewhat aft of amidships beneath the raised bridge deck and extends but a short distance into the galley. There is a considerable deck space around the cockpit which, together with that around the cabin trunk forward, gives ample space for handling lines, etc. The cockpit floor under which the fuel tanks are installed is considerably above the waterline so that any water taken in over the wide decks will be easily drained away. The boat should make a comfortable all round craft for fast cruising.



A novel feature in this new 36-footer, Pilgrim, by Messrs. Gielow & Orr, is the interesting combination of the raised deck and trunk cabin types.





Pilgrim's sections show considerable dead rise with easy bilges and but little flare forward.

### A Trim 40-Footer.

THE design shown below is fresh from the boards of the Matthews Company, and a boat from them will be started immediately, for delivery next April. The general dimensions are: Length over all, 40 ft.; beam, 9 ft. 6 in.; and draft, 3 ft. The construction is of oak cedar planked and copper riveted. All fastenings throughout are of copper and all other metal work is of bronze. The raised top sides forward will be finished in white, the same as the hull, while the windows, trunk sides and cockpit will be finished in mahogany. The interior finish will be in cream colored enamel trimmed with mahogany.

The arrangement within is such that a small family could use the boat with absolute com-

fort for extended cruising and, in fact, were adopted after trying out a boat of similar interior arrangement on a 2,000-mile cruise through the Georgian Bay section. This arrangement provides for the galley forward as it was desired to have it, and the motor widely separated. The ice-box extends the full width and height forward of the galley and is filled through a hinged hatch on deck.

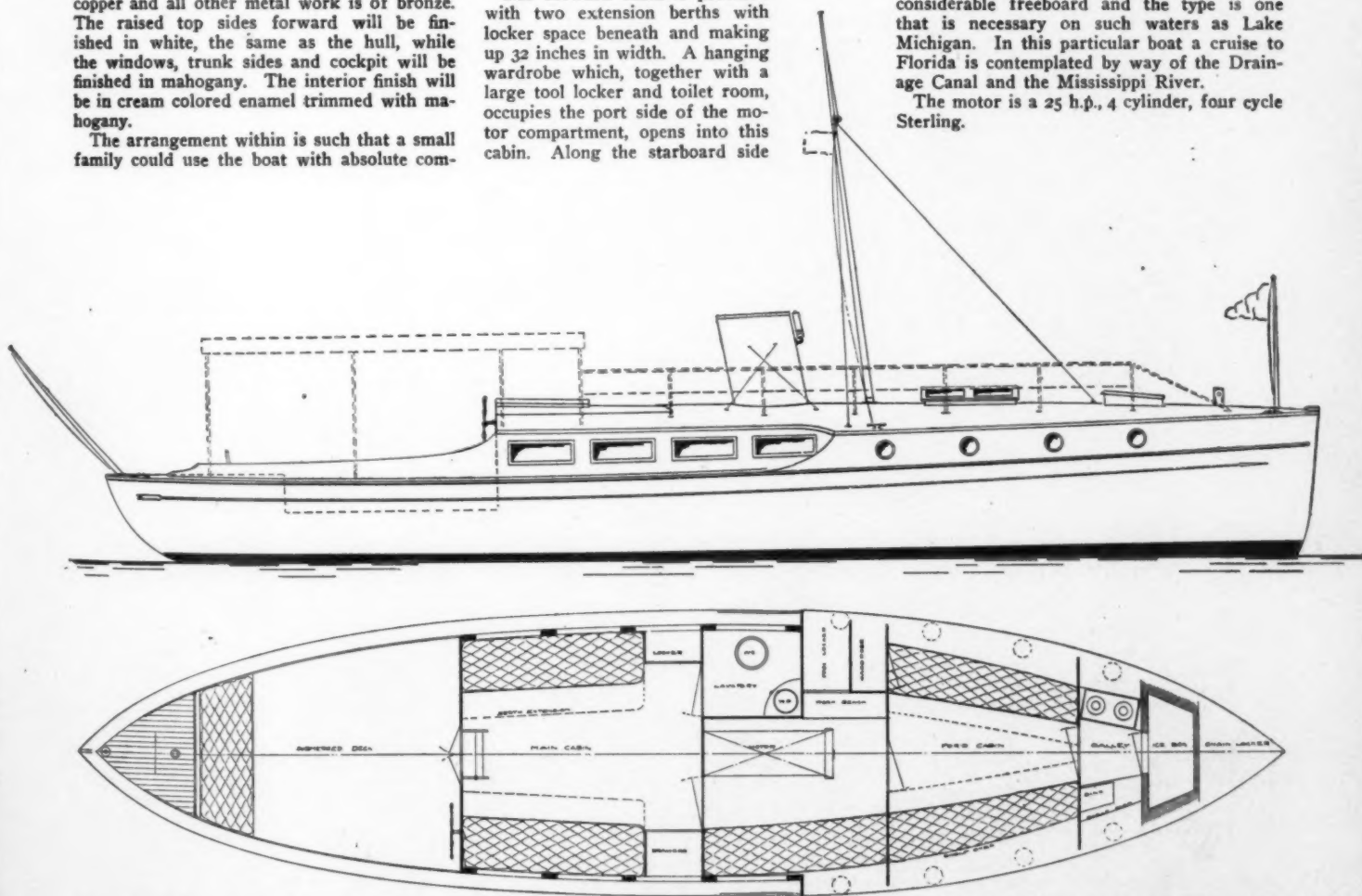
The forward cabin is provided with two extension berths with locker space beneath and making up 32 inches in width. A hanging wardrobe which, together with a large tool locker and toilet room, occupies the port side of the motor compartment, opens into this cabin. Along the starboard side

of the engine room is a berth for the engineer.

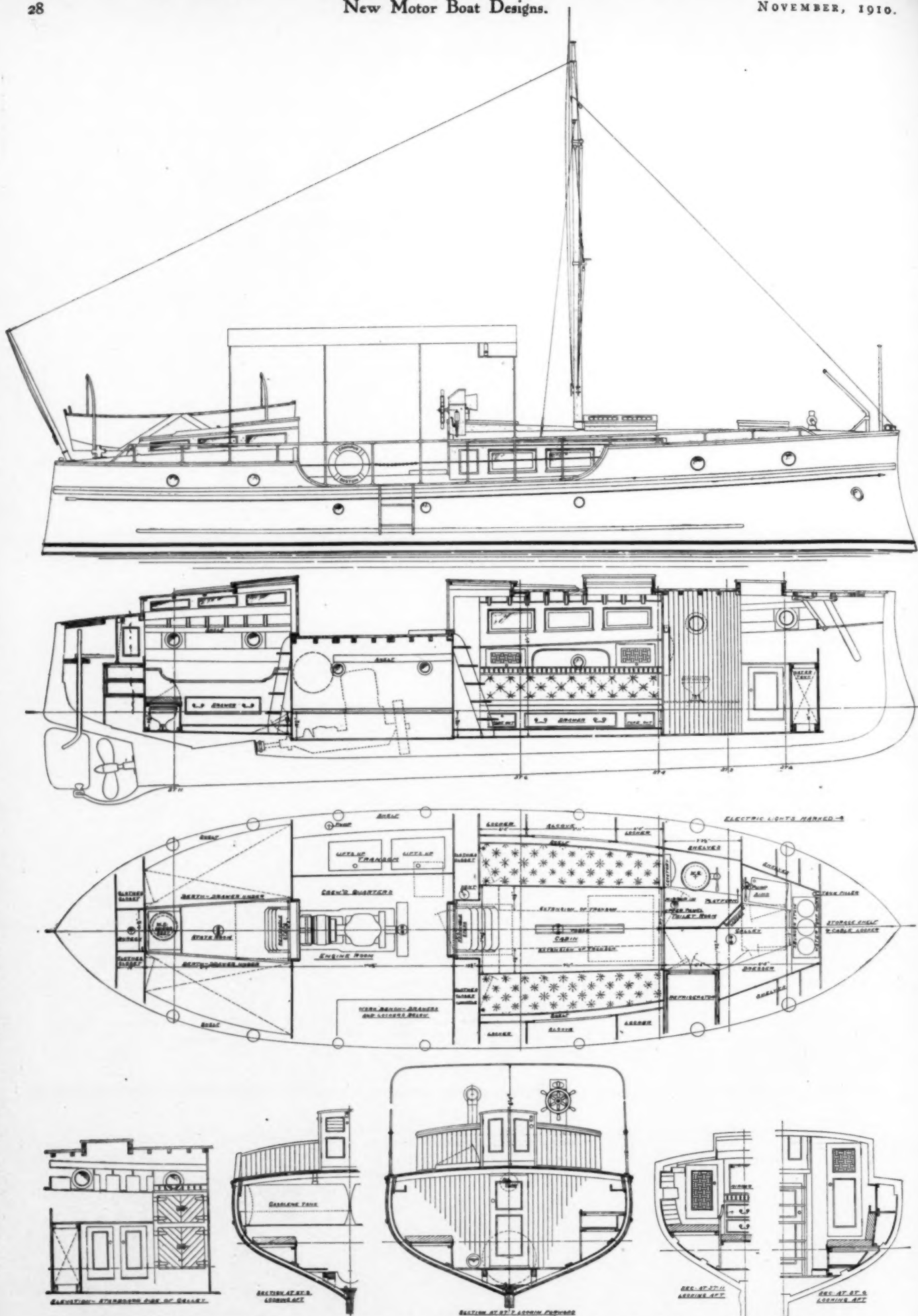
The main cabin, next aft, is provided with two extension berths, with a locker on the port side and a dresser with drawers and shelf on the starboard side. The toilet room is entered from this cabin.

From the after end of this compartment the companionway, amidships, leads to the cockpit, which is a compromise between the flush deck and ordinary cockpit. The boat is given considerable freeboard and the type is one that is necessary on such waters as Lake Michigan. In this particular boat a cruise to Florida is contemplated by way of the Drainage Canal and the Mississippi River.

The motor is a 25 h.p., 4 cylinder, four cycle Sterling.



A newly designed and trim 40-footer, just off the boards of the Matthews Company, shown in outboard profile and accommodation plan.



A novel little 38-footer—profile and accommodation plans of Grampus, recently designed by Arthur P. Homer for his own use.





### Grampus-A Novel 38-Footer.

**G**RAMPUS, whose plans are shown on the preceding pages, was designed in the office of Arthur P. Homer, 88 Broad St., Boston, for Mr. Homer's personal use. She was designed to fit the conditions of the Marblehead-New York race with the idea of winning on handicap and to make a very comfortable and roomy cruiser. It will probably be built this winter for use next summer.

Designed with the idea of getting all the room possible on a given length, all the space was utilized with the utmost care. The lines were given careful consideration to produce a boat that would not pound or roll excessively and at the same time have a large amount of beam, with a large flare forward which will make her dry and buoyant and stop plunging. With the sharp deadrise, good depth, drag to keel and rabbett, and the tumble home sides, she should be a very good sea boat. The battleship bow and stern was adopted for their novelty and to lengthen out the waterlines and get them as long as possible on a given

at all times. The engine room is also fitted with a cylinder oil tank, work bench, transom for the engineer and some auxiliary machinery and is ventilated by a deck hatch, four port lights and two ventilators.

The main cabin is large and comfortable and will sleep four by extending the transom and has ample clothes closets, lockers, drawers and a dining table. The cabin and state-room are finished in mahogany and white enamel. All the rooms are lighted by electricity.

The toilet room is forward on the port side, of good size and has folding lavatory, linen shelves, etc. The galley is in the forward part of the boat and is fitted completely and large enough to cook in comfortably. The water tank is under the stove stand.

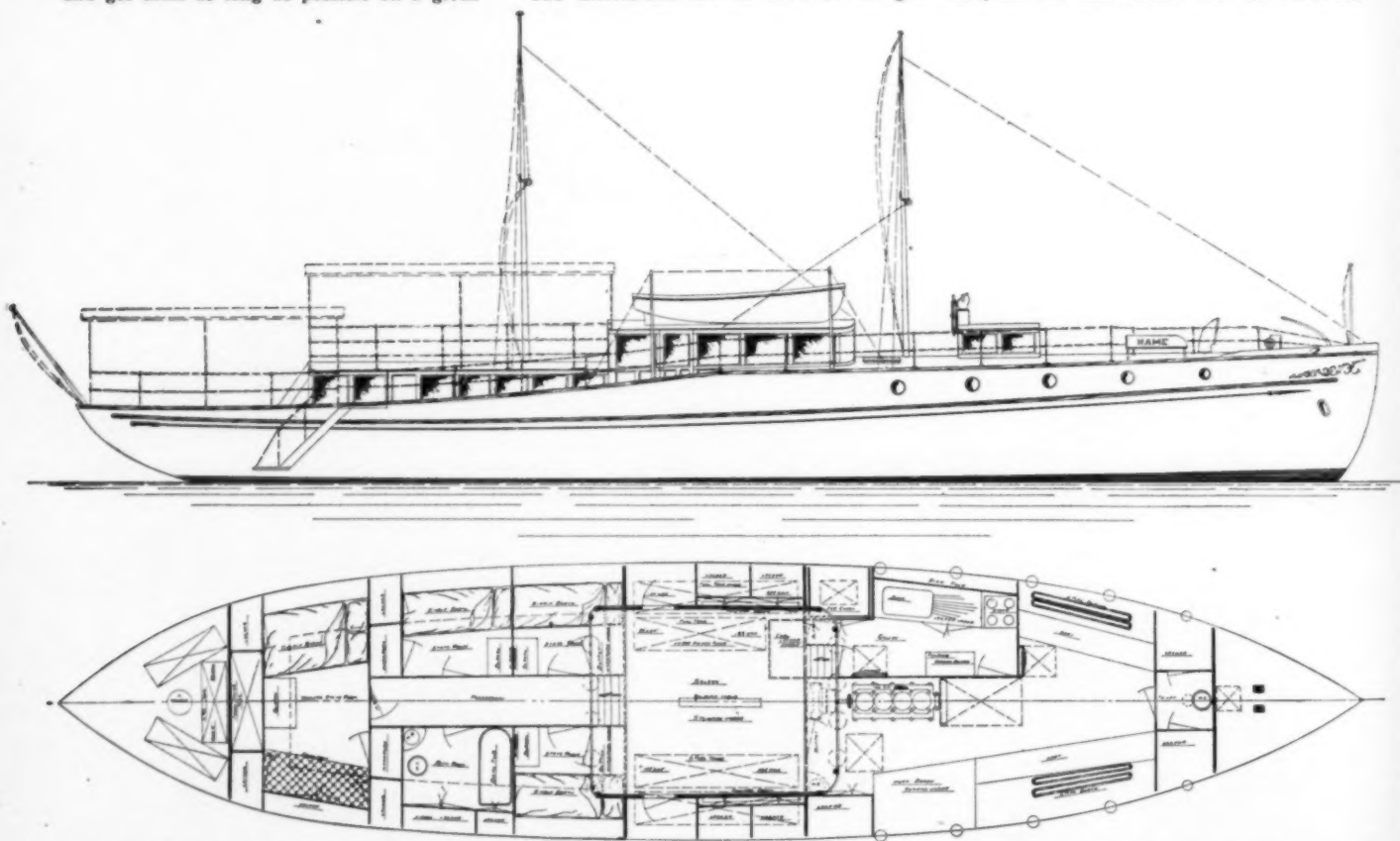
The construction is strong and heavy and designed to stand severe use. All the deck fittings and bright work are of mahogany.

The boat is somewhat novel in appearance, but is nicely lined and has an abundance of room and should be a very satisfactory and comfortable boat to cruise in.

The dimensions are as follows: Length

able to keep the sea under any conditions of weather likely to be met with.

In carrying out the idea of the raised main saloon, the flooring of this compartment has been kept at the level with the main sheer line, which gives large storage space beneath and forms a very pleasant living compartment. By consulting the plans, it will be noted that this raised house amidship can be entered from either side and consists of a cabin about 11 ft. square, with a dining table in the center and folding Pullman berths behind the joiner work under the windows on either side, with extensions built over the deck forward and aft in the form of sideboards and buffets. The main living quarters are entered from this saloon by descending stairs which lead into the passageway. They consist of three single state-rooms and a toilet room and one double state-room at the after end for the owner's personal use. All of these living quarters are under an extension of the raised deck, having large windows which give ample light and ventilation. By this arrangement also, all the state-rooms and the toilet are



The new Caroline II, a deep sea cruiser, just designed by Morris M. Whitaker, shows an original placing of the deck house amidships.

length and to get all the available space inside.

The deck plan is clearly shown in the plans and is practically flush, being raised forward and aft with a large open space or bridge between the cabins for chairs and steering. A tight section of the bridge can easily be taken up to get the cylinders out.

The small boat is carried on davits aft on the port side. A signal mast with two yards is of sufficient size to carry a small steadying sail and adds to the appearance.

The arrangements below deck are commodious. The state-room aft is large and has two wide berths, bureau, two clothes closets, and a toilet, which is covered by a seat. This room is lighted by a combination companion-way and skylight giving full head room and making a very light room.

Next forward under the bridge deck is the engine room which is designed to give sufficient room to install an 18 horsepower heavy duty, two cylinder,  $6\frac{1}{2} \times 8$  in. Sterling engine. Two cylindrical gasoline tanks, of seventy gallons each, are fitted against the after bulkhead athwartships high enough to get a gravity feed

over all, 37 ft. 11 in.; length low waterline, 37 ft. 1 in.; beam extreme, 10 ft.  $7\frac{3}{4}$  in.; draft at skeg, 4 ft.

### Caroline II, A Deep Sea Cruiser.

**C**AROLINE II, plans of which are given herewith, is a new type of raised deck cruiser just designed by Morris M. Whitaker, of New York, for Mr. Frank Dennis, of the same city, to succeed Caroline, Mr. Dennis' first boat, from the boards of the same designer.

In working over the owner's requirements in the new boat, the architect took into account first the consideration of a main saloon for use in stormy or wet weather, from which it would be possible to secure an unobstructed view in all directions, while carrying out the raised deck cruiser idea which has proved so successful in the point of strength and seaworthiness. Mr. Dennis has used Caroline for cruising extensively and makes many offshore trips which require a boat that will be

equally accessible, without passing through any intermediate cabins.

At the forward end of the saloon is another flight of stairs leading down into the galley, which is located on the port side and is a compartment 13 ft. x 6 ft. in size, which gives ample space for the culinary department. It is separated from the engine room and crew's quarters by bulkheads, giving entrance into the engine room through a door and removable panels in the bulkhead, should repairs to the motor make this necessary.

The crew's quarters forward are practically 21 ft. in length and are well lighted and ventilated by ports on the sides and by a trunk skylight just forward of the motor. From this point on deck the boat will be steered in good weather, an auxiliary steering gear being fitted with the deck house for use in heavy weather.

The fuel supply will be carried in cylindrical tanks located under the floor of the main saloon and in similar tanks in the after peak compartment, fresh water being carried at the after end of the owner's state-room.

Provisions against boarding water are made





# Some Motor Boats of Interest.

## Saxon—A 35-Footer.

**A**MONG the successful power boats of the past season should be mentioned Saxon, a boat of the auto-express type owned by Clifford Barbee, of the Colonial Yacht Club, of New York City. The hull, which was designed by the sons of the owner and built by the firm of Acker & Androvette, is 35 feet over all by 5 ft. 2 in. beam and embodies several interesting features, among them the modified square torpedo stern.

The planking is of  $\frac{3}{8}$  in. white cedar, copper fastened to closely spaced oak ribs  $\frac{3}{4}$  x  $\frac{7}{8}$  in. The decking, engine compartment, hatches, bulkheads, coaming, seats, etc., are of Honduras mahogany and the contrast with the white sides makes an effective combination.

The engine is a 35 h.p., high speed Vim with aluminum base and equipped with Lavigne mechanical oiler, Baldrige reverse gear, Atwater-Kent Unisparker and K. W. magneto, the entire power plant being installed beneath swinging hatches in the forward deck.

There was some scepticism as to the advisability of installing a two cycle motor, but the

It can be seen at a glance that seaworthiness was the first consideration in her design. Her underbody is symmetrical fore and aft, with canoe bow and stern, V-shaped underbody and easy bilges. Her decks are long both fore and aft and the engine is completely enclosed in a housing in the forward part of the cockpit.



The thirty-five-footer Saxon maintains a speed of over 20 miles an hour.

## The Tank Boat, Sylvia.

**M**OTOR boatmen on Chesapeake Bay are enjoying an era of cheap prices for gasoline, as it is now possible to purchase it from the Texas Oil Company at 9 cents a gallon, whereas the Standard Oil Company charges 12 cents for the same grade.



Sylvia, the seventy-foot motor tank boat, belonging to the Texas Oil Co.

The Texas Company has entered strongly in competition with the larger company and, besides a huge plant at Baltimore, stations have been established at Annapolis, Solomon's Island, Colonial Beach, Reedsville in the Great Wicomico; Sharps Wharf and Urbana in the Rappahannock; Crisfield and Norfolk. Other stations will be established during the next few months and it is the plan of the company to reach all the larger settlements on the bay and its tributaries.

To supply these stations the company has the motor tank boat, Sylvia, a picture of which is shown on this page. This vessel was built at Milford, Del. She is 70 feet over all with 12 feet beam and 6 feet 6 inches depth. She is equipped with a 50 horsepower Standard engine which also operates a pair of pumps to discharge the cargo oil from the tank that contains 11,800 gallons. Besides this tank the vessel has a fuel tank that holds 500 gallons which gives her a wide radius at an average speed of 7 miles an hour.

Sylvia is built solidly, as a glance at the illustration will show. She is constructed along the lines of the tug boat with bluff bows, considerable draft and V-shaped underbody. Her motor is installed in the house aft and the forward part of the boat is devoted to the cargo, tank and the pumps for emptying it.

She is one of a fast growing fleet of commercial motor boats.

results obtained with this installation have thoroughly justified its choice. Turning a 19 x 30 inch, three-blade Columbia propeller at 875 r. p. m., a sustained speed of 20.8 miles per hour is obtained.

The boat was built as a fast runabout for use on Long Island Sound and adjacent waters and by the use of an under-water exhaust runs at full speed with absolute silence. Saxon recently won the Tappan Zee Yacht Club Cup, her rating under the American Power Boat Association rules being 69.48.

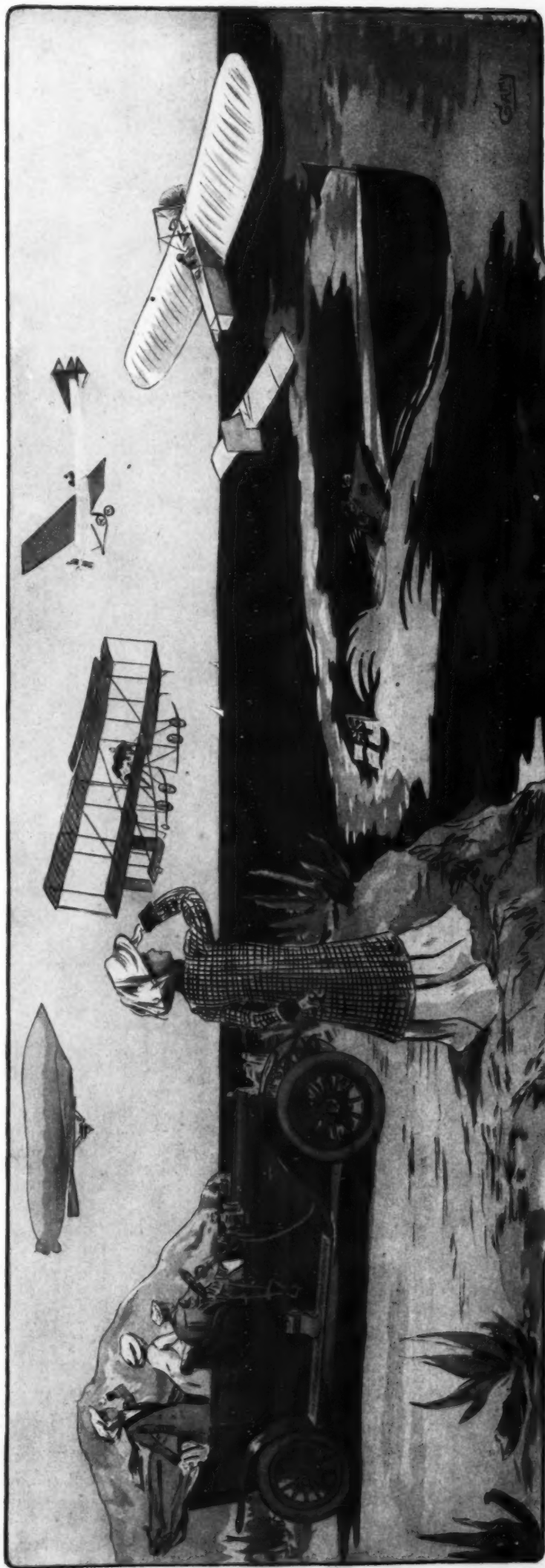
## Pilot Launch for Panama.

**I**N the accompanying illustration is shown a boat of interesting design which is to be used as a pilot boat in Panama. She is 35 ft. over all by 7 ft. 6 in. beam, and as shown is modeled something after the well known whale boat type. Her motor, a four cylinder 6 x 6 in., 32-40 h.p. Speedway, is installed just forward of the bulkhead where the controls are located. She was built by the Gas Engine & Power Co. & Charles L. Seabury & Co. Cons., and recently, on her trial trip, showed a very creditable performance.



The sturdy thirty-five-foot pilot boat which was built for use in Panama.



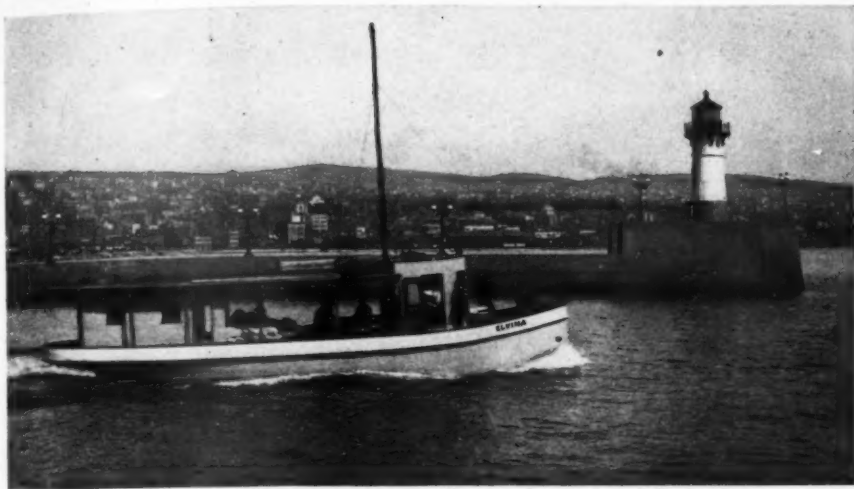


**MOTOR  
BOATING**

MODERN SPORTS

5





The 40-footer, Elvina, makes ten miles an hour when fully loaded.

### Elvina, a 40-Footer Packet.

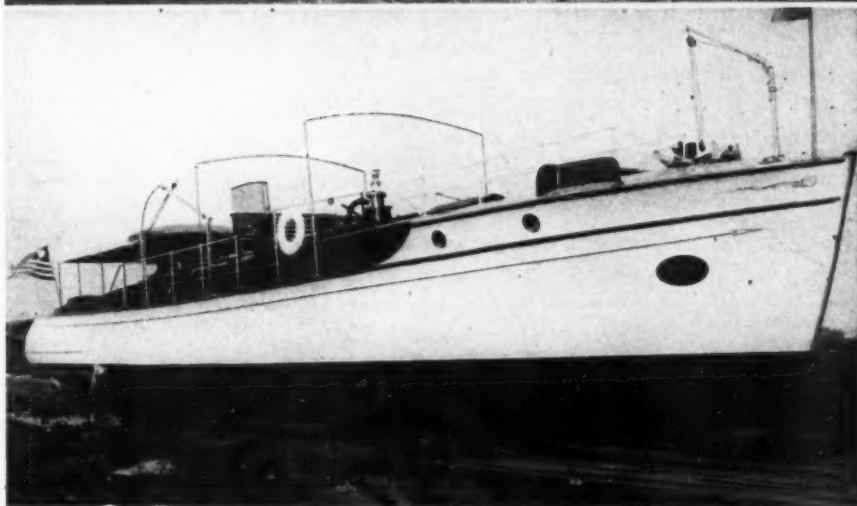
Elvina is a 40-footer running daily between Duluth and Cornucopia, a distance of 40 miles. She is equipped with a 40 h. p. four cylinder Campbell motor, which is installed in the after house, leaving the middle of the boat free for freight and passengers. As is frequently the case in motor yacht practice, the controls are carried to the wheel so that the boat may be handled by one man. The above illustration shows Elvina working out of Duluth harbor, with 40 tons of freight aboard, with which she is capable of maintaining a speed of 10 miles per hour.

### The 60-Footer, Eph IX.

The boat shown in the illustration to the right is a 60 footer of 9 feet beam and 3 feet draft recently completed by the Matthews Boat Company for Mr. Carl G. Fisher, of Indianapolis. The boat is built with oak keel and frames and with a special truss construction. She is planked with  $\frac{3}{4}$  inch cedar and the deck house and interior are finished in mahogany throughout.

The general arrangement provides for a water-tight compartment forward. Next aft is the galley, fitted with full height zinc-lined ice box and the usual equipment. There are hanging lockers on either side between the galley and main cabin. The latter compartment is fitted with two extension berths with locker space beneath. The companionway to the bridge deck is on the starboard side and the lavatory compartment occupies a corresponding space to port.

The bridge deck extends the full width of the boat, and is fitted with a divan seat running over the after deck house, which will comfortably seat five people. The steering wheel is mounted at the forward end, and alongside of same are the controls governing the motive power. The engines are two 90 h. p. Buffalo machines, and the matter of control with this amount of power was a difficult



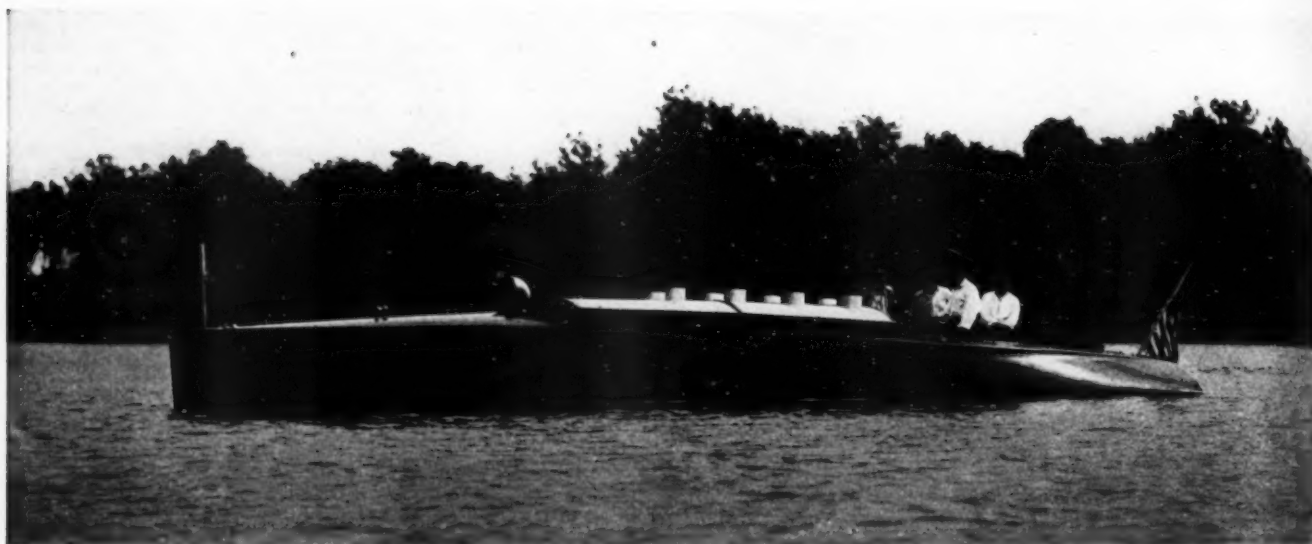
Eph IX, a trim 60-footer, is the ninth boat of a well-known series.

### Coeur Dame—A German Cruiser.

The illustration at the bottom of the page is of an interesting cruiser seen recently at the Muggelsee Regatta held by the Motor Yacht Club of Germany. This boat is typical of recent continental practice, having the motor installed forward under the forecabin trunk and ventilated by a stack. The pilot house with sunken floor is just aft and above the engine room and the engine is controlled from this point. The cabin amidships is divided into a main saloon with berths, and galley and toilet compartments forward. The small cockpit pit aft is large enough for the use of several chairs. The pilot house is so arranged that in bad weather it may be completely enclosed and this feature is a popular feature of many of the recent German cruisers and bids fair to be extensively adopted in other waters.



Coeur Dame varies greatly from our American practice.



Above the water line, R. G. E. is strikingly similar in appearance to Dixie II.

## An Effort for Greater Speed.

A Forty Footer of the Displacement Type, Equipped with an Eight Cylinder, Double-Acting Motor.  
An Account of the Construction and Trials of This Mysterious Boat and Her Engine.

By E. H. Rosenberger.

Photographs by Joseph N. Pearce.

UP on the Delaware River, thirty miles north of Philadelphia, where the Delaware & Raritan Canal empties into the river at Bordentown, in a most secluded and romantic spot, a dozen experts have been at work for months designing, building and trying out a 40-footer, the R. G. E., which they believe will be the fastest displacement racer afloat. Every trial, so far made, proves every claim that her designers and builders have set forth.

She is built on entirely new lines. Hull, engines, propeller and every working part of the craft has embodied in it new ideas and thought, based on scientific computations, and for which is claimed the marking of a new epoch in speed-craft construction.

R. G. E. was built with the intention of being a Harmsworth Cup defender. Delays

in the procuring of materials prevented her being completed in time, and her owner and builders declare that but for this there would have been a different story written of the British International Cup Race.

It is the firm belief of all who have seen the boat and who have watched the tuning-up trials that, had R. G. E. been completed in time to take part in the races at Larchmont, Dixie II would to-day be a "has been," and the Harmsworth Trophy would this year be in possession of the American yachting fraternity by right of superiority in naval architecture.

She can go,—well, while figures have been given out unofficially as to her speed, her builders decline to say what the preliminary trials have shown, beyond saying that she has far surpassed their expectations. At this

writing she has only been given tuning-up trials, not over measured courses nor with any rating considerations.

She is a beauty, being of solid mahogany, finished in a high polish, and in her running is practically free from all vibration.

Mr. Harris Hammond, son of John Hays Hammond, of New York, is her owner, and she was built by the Rice Gas Engine Company, at the works of that company at Bordentown. The hull was designed by George A. Cromwell, of Bordentown, and Alfred P. Miller superintended its construction. The engine was designed by John V. Rice, Jr., and was erected and installed by W. K. Conrad. M.E. C. S. Lynch, N.A., M. E., designed the propeller wheel, which is of a new type and adds materially to the new ideas embodied in the construction of the boat.

It may be unfair to prate of what might have happened or what would have been the story had the R. G. E. been in time to take part in the International Cup Race, but since the delay in the building of the boat was unavoidable, the regret is sincere. The shipyards of the Delaware have a world-wide reputation for the construction of all kinds of craft, not only of the battleship and merchant marine classes, but of the speedier craft as well.

The Delaware River yards are far famed for the progress made in naval architecture, and yachtsmen in this section are watching with much interest the latest development, and fondly look forward to having built a boat that will not only be the speediest of racing craft, but which will have embodied in its mechanism and hull construction much that will prove of commercial value.

A detailed technical description of the engines and hull is now being prepared for publication, along with the plans, in the interest of the promotion of boat building. We give herewith a brief preliminary description, along with the claims.

R. G. E. is equipped with a Rice double-acting gas engine, manufactured by the Rice Gas Engine Company. The claims for the engine are the development of twice the power of an ordinary two-cycle engine having the same number of cylinders, or four times the power of a four-cycle engine with the same number of cylinders. The engine requires no greater space and has a more even turning moment.

In design every working part is exposed. No flywheel is used. The engine is controlled



It is claimed that her eight-cylinder, double-acting engine delivers nearly four times the power of a four-cycle motor of similar dimensions.



by air, both starting and reversing. An important feature are the bearings, which are large—larger, in fact, than in any gas or steam engine of its size. Every part of the engine is in view of the operator at all times, so he can constantly see to his adjustments.

Lubrication is forced, so that every part is assured an ample supply of oil at all times. Neither clutch nor reversible propeller is used.

The tail shaft is connected direct to the crank shaft through the medium of a knuckle joint. The boat is thus reversed quickly, the air taking hold instantly, allowing the engines to be reversed at speed. The ignition is by magneto and by storage battery as well.

The hull measures 39 ft. 11 in. She is 5 ft. 8 in. broad and has a draft of 14 in. The hull is planked with 1/4-in. mahogany, and the construction throughout is of the highest type.

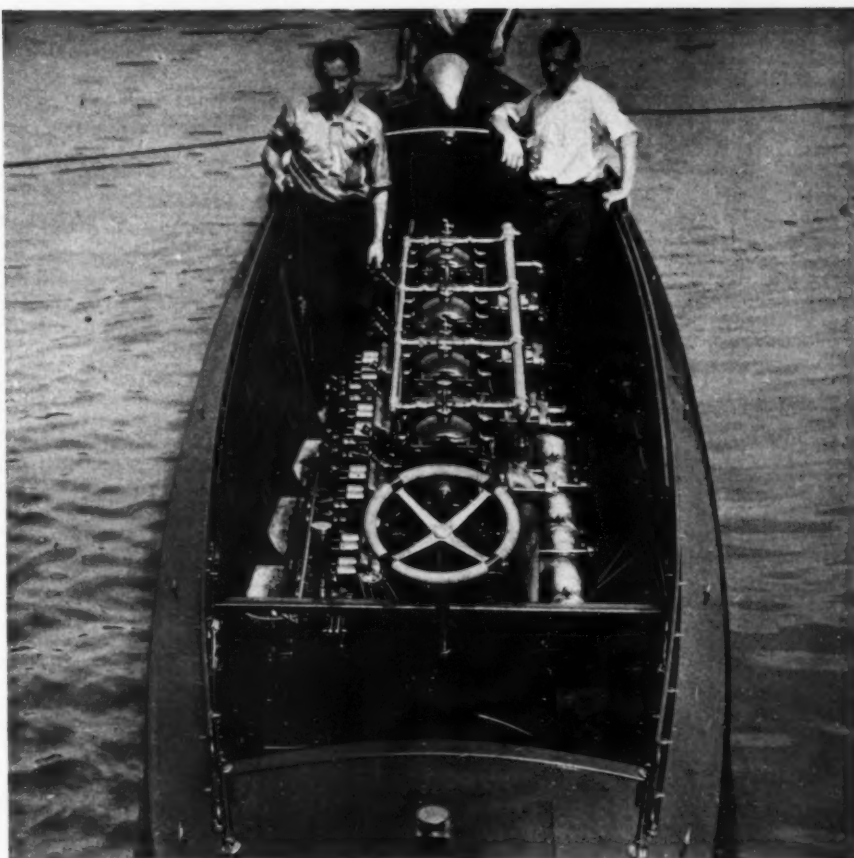
The boat's lines have been laid down, and will be shown with the technical description which is now being prepared. The computations have been made to determine stability, displacement, tons per inch immersion, and all other racer's data which any design should have, but which, from the performance of some racers, it is evident have been omitted. It is the policy of the designers to know not only the stability of the craft they build, but to know the efficiency of the engines as well, enabling all faults of one design to be eliminated in engines that follow.

The engines of R. G. E. are just the reverse of the engine used in racing boats. Usually, engines installed in speed boats are built for a special purpose, and cannot be used for anything else. The engines used in this boat are so constructed as to meet the wants of a speed boat, and yet can be taken out and used with the highest efficiency in a cruiser or an auxiliary. In this design the center of gravity is markedly low, which in marine work is of the greatest importance.

The trials thus far have shown that the longer the runs the more perfect the machinery works and that it is capable of holding up a high speed for any length of time. The speed has been taken for mile after mile covered, and shows that the actual speed can be maintained for almost any length of time desired.

Her builders claim that the engines meet a long-felt want. Builders and designers have been working for a long time to get a successful double-acting engine, and for this reason the engines in R. G. E. will be of great interest to the profession at large.

The engine is really a slow-speed machine, designed to develop 250 h.p. at 750 revolutions. On the test block she ran 325 h.p., and would have developed still more but for the time limit. She was only on the test block five



In the design and construction of the motor extreme lightness was not attempted.

hours, a comparatively short time.

In design it differs from any other engine. All its reciprocal parts are exposed. To any one acquainted with internal combustion, the advantages obtained, corresponding to the steam engine, can readily be appreciated. The engine when turning 1,000 revolutions, which it did on test, showed absolutely perfect balance, as is shown by the fact that no rocking was set up.

As to the hull, when the engines are turning, or just as soon as the engines get to the point where they approach the normal revolutions, the vibration of the hull entirely disappears. This is due to the vibration of the engine and the hull being out of step, or, in other words, not synchronizing.

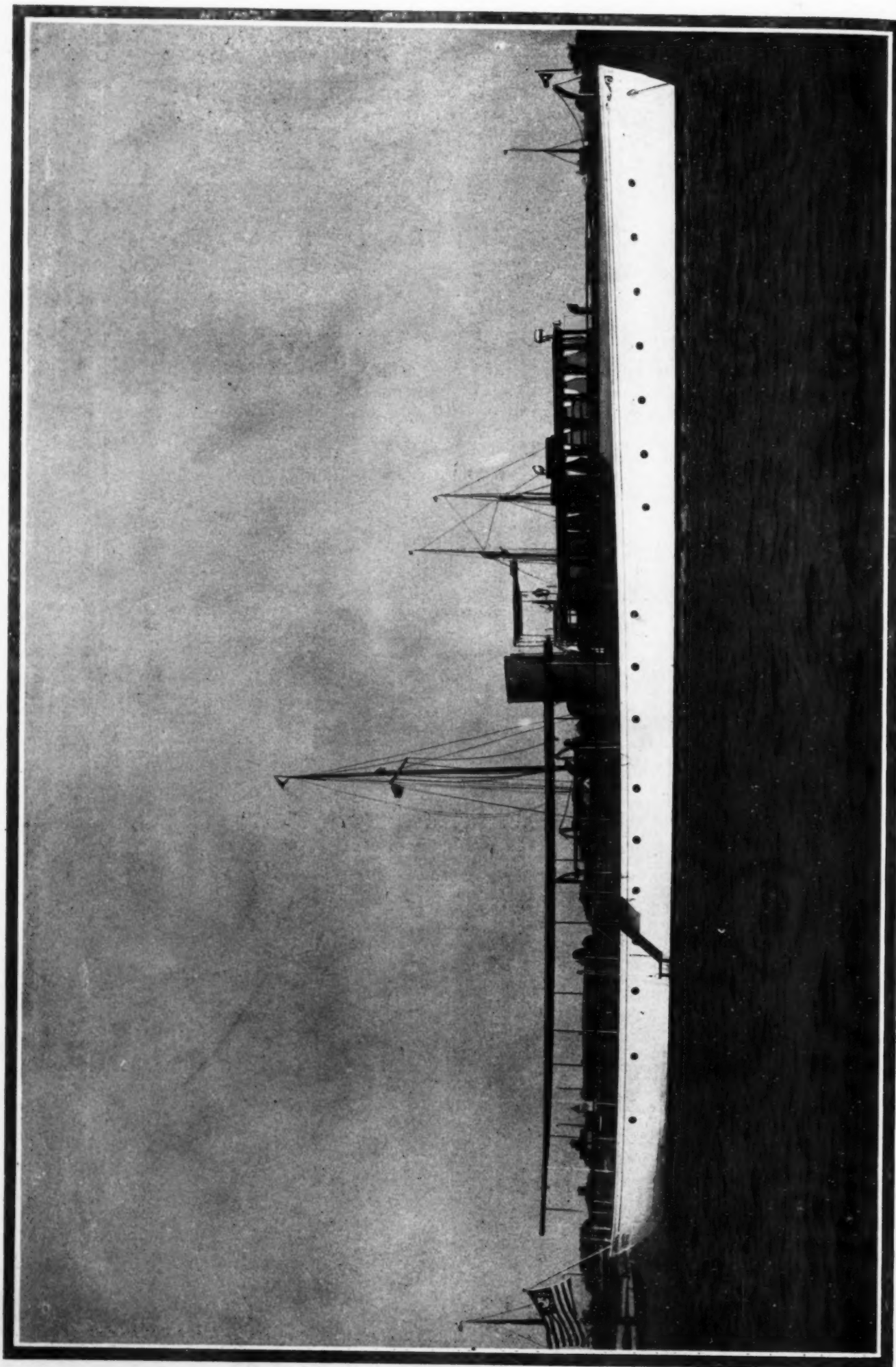
Contrasting this boat with the ordinary racing craft, her designers assert that the

racing boat of to-day, aside from the high speed developed with small power, little interest is presented to the naval architect, as the scientific data is of little value. The engine of an ordinary racer is an especially designed machine, developing large powers for its size, the construction being light, and sometimes flimsy, and not a commercial proposition. They say: "Looking over the various races that have been run, we find in a majority of cases the engines, even in many preliminary trials, have given way. We have no knowledge of an engine designed for the high-speed racing craft that has been able to withstand any lengthy endurance runs."

The boat at her highest speed on her tuning-up trial developed no signs of structural weakness. Tests have been made of her stability and she shows herself a most stable craft.

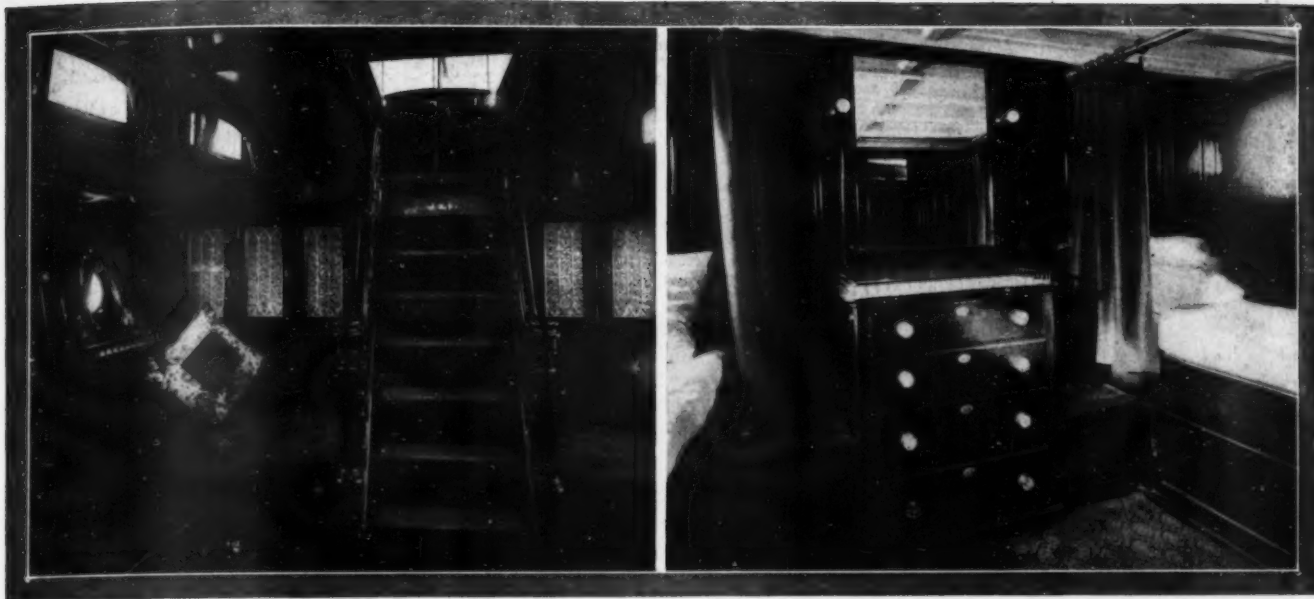


Her hogged sheer is shown clearly in the picture to the left and in the right-hand one, her easy entrance may be seen by the water line.



Alacrity, the 118-foot, steel motor yacht, with her turtle deck and low house, is smart in appearance, and is good for 20 miles an hour.





The after saloon is entirely independent of the rest of the vessel. The owner's stateroom is forward beneath the deck house.

## The 118-Footer, Alacrity.

Photographs by Levick.

ONE of the most notable large motor boats turned out this last season is Alacrity, designed by Messrs. Cox & Stevens and owned by Mr. A. Bradford of the New York Yacht Club. She was built by the Pusey & Jones Co. of Wilmington and is equipped with two Craig motors of 300 h. p. each.

Mr. Bradford's requirements were that he should have a large amount of accommodation and at the same time be certain of a speed of not less than 20 miles an hour. After considering the questions carefully the dimensions determined on were: Length over all, 118 feet; water line, 110 feet; beam, 15 feet. Mr. Bradford also desired a vessel that would be exceedingly smart in appearance and at the same time would be a good sea boat. The modified canoe bow and stern were adopted together with a turtle deck forward to reduce the apparent height of the deck house, the latter being slightly recessed below the main deck for the same purpose. It was found possible to keep the vessel flush deck the greater part of her length without giving her undue freeboard, and a low trunk hatch is worked over the after quarters where the headroom is rather low otherwise. The headroom throughout is not less than 6 ft. 5 in. in the clear.

The two 300 horse Craigs, together with the gasoline which is stored in cylindrical tanks, are installed in a compartment absolutely separated from the rest of the vessel by means of steel bulkheads, the center of weight of the entire plant being practically over the center of buoyancy of the vessel, thus making for seaworthiness and avoiding any change of trim with alteration of fuel supply.

The hull is of mild steel sufficiently light to avoid overloading but heavy enough not to be endangered by corrosion. The deck house, cabin trunk and all exterior wood work are of teak and the decks are of white pine.

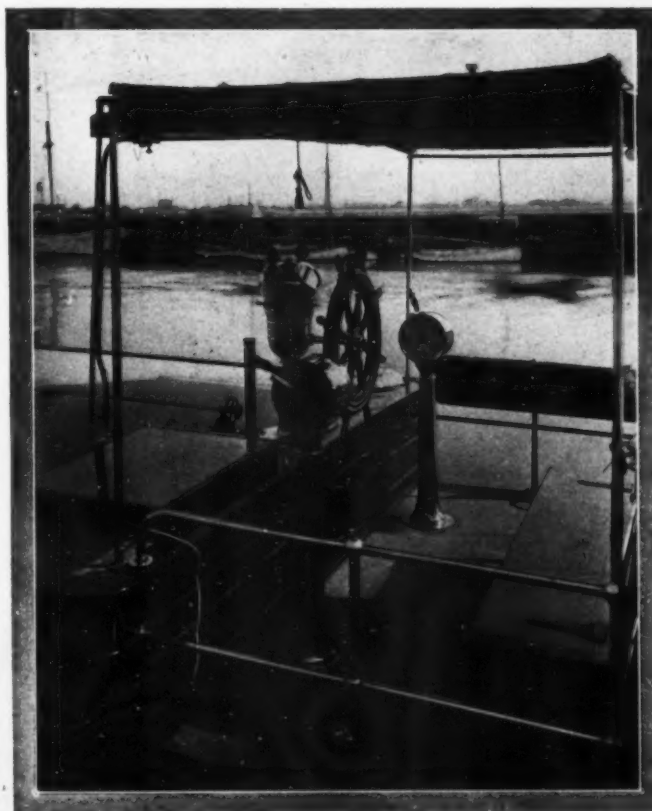
The accommodations are exceptional, in that each of the three staterooms extends the full width of the vessel. There is a stateroom just aft the engine compartment communicating directly with an 8 ft. bath room on the port side, tiled with interlocking rubber and equipped with a large tub. The door from this stateroom also opens into a passage running aft and connecting with the companionway on the starboard side. At the after end of this passage there is a similar stateroom which also connects directly with the bathroom. In the extreme after end of the vessel there is a saloon separated from the second stateroom by bulk-

heads and a passage. This compartment connects directly with a toilet room of its own and there it is a companionway leading from the after end of it, so that, when used as a stateroom, it is entirely independent of the other rooms. By means of the two companionways it has been possible to have three full width staterooms as no passageway is necessary.

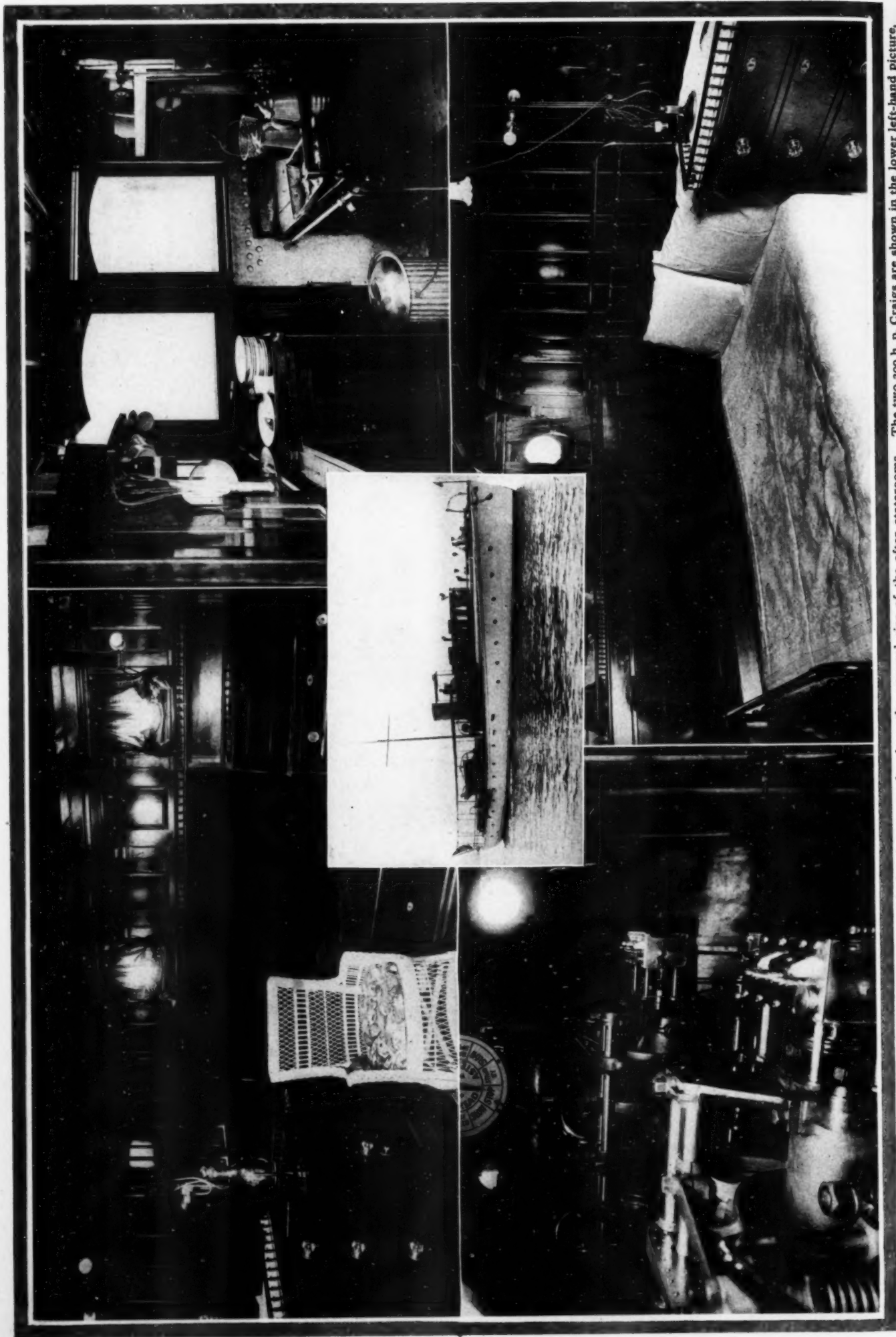
An unusually long deck house has been used, with the dining saloon at the forward end, 12 ft. long and accommodating 14 people at table. The after portion of the house is used as a galley, thus saving much space below and affording excellent service through a pantry and serving room. Opposite

the pantry on the starboard side is the entrance to the dining room by means of a landing or vestibule, which protects the dining room when the door is opened in bad weather. From this landing in addition there is a staircase leading to the owner's quarters below. These consist of a double stateroom 9 ft. in length and the full width of the boat, having a built-in berth on each side, a bureau, two seats and two large wardrobes. This room has connecting with it on the port side a bathroom equipped with bath tub, toilet and lavatory, and tiled with interlocking rubber tiling, as in the after bathroom. The finish of the owner's stateroom is in selected hardwood handsomely paneled. Notwithstanding her size, Alacrity will need a crew of but seven men, which is about half the number usually required on a steam yacht of the same accommodations and speed.

Alacrity has been in commission several months and has given perfect satisfaction. The speeds developed on her trials were excellent, her brace of Craigs running smoothly from the first. As was said before, seaworthiness was not sacrificed for speed, and in this respect she has proved herself well up to the expectations of her designers in the several weather tests that she has undergone. The illustrations give a good idea of the boat's interior.



The bridge deck is directly over the engine room insuring easy communication.



Alacrity, the fast 118-footer. The upper left-hand and lower right-hand photographs show the unusual size of the after staterooms. The two 300 h. p. Craigs are shown in the lower left-hand picture, and in the upper right-hand corner is shown one end of the well equipped galley.





Dedication ceremonies at the new club house of the Lake Hopatcong Yacht Club, Lake Hopatcong, New Jersey.

**American Power Boat Association, Grand Island, N. Y.** The Buffalo section of the American Power Boat Association was organized at a meeting held a short time ago by all the delegates of the local motor boat clubs at the Iroquois Hotel, Buffalo, N. Y. A constitution was adopted and the following officers were elected for the year: Chairman, Commodore Edward Michael, of the Buffalo Yacht Club; vice-chairman, Albert F. Dohn, of the Buffalo Launch Club; secretary, Robert H. Mason, of the Buffalo Yacht Club; treasurer, John F. Ellsworth, of the Motor Boat Club of Buffalo. This completes the motor boat section of the American Power Boat Association at Buffalo, making a strong central body for the large contingent of motor boatmen in this locality. The action is in line with the plans of the A. P. B. A., which is organizing these local sections in various parts of the country. The chairman of each local section becomes a vice-president of the A. P. B. A. and voices the needs and requirements of his locality in the deliberations of the council.

**Cliff Motor Boat Club, Sea Cliff, N. Y.** At the annual election of officers which recently took place the following were chosen for the ensuing year: Commodore, H. O. Grieshaber; vice-commodore, L. J. Harvey; rear-commodore, J. F. Thibaut; fleet captain, Arthur Tilley; secretary, William Murshon; treasurer, C. W. Sniffen. The season has been the most successful one the club has had since its formation in 1907.

**Sheboygan Motor Boat Club, Sheboygan, Mich.** Owners of power boats in the vicinity of this place have recently organized a motor boat club and the following officers have been elected for the year: Commodore, Burton Fairweather; vice-commodore, Ivar Lohman; secretary-treasurer, C. J. Ewer; directors, George Kempf and Samuel Fairweather.

**Cleveland Power Boat Club, Cleveland, Ohio.** This club recently announced the results of its past season's races, the champions being Scout, owned by T. I. Stoller; Mauna-Loa, owned by C. H. Stuart; Aurora, owned by James Miller; and Traveler, owned by George Dietz. Scout belongs to Class A, open boats under 20 feet; Mauna-Loa to Class B-C, open boats over 20 feet; Aurora to the cruiser class; and Traveler to the speed boat class. Three handsome silver cups were offered as prizes for the regatta held on the afternoon of October 15th. off Edgewater Park. The following committee had charge of the event: A. Y. Gowen, M. H. Moffatt, Otto Nehrnt, Fred Squires and Robert E. Power.

**Bay Shore Motor Boat Club, Bay Shore, L. I.** Although this club was only recently

formed a number of races have been very successfully held and will be continued until late in the fall. It is the intention of the club to buy land and build a club house fronting on the bay early in the spring so that the house can be ready for occupancy by the first of May. Officers were chosen as follows: Commodore, W. H. Moffatt; secretary, W. H. Schwab; treasurer, J. J. Gibson; vice-commodore, Dr. W. A. Hulse. The following board of governors was elected for one year: W. H. Moffatt, W. A. Tucker, E. M. Rockworth, Dr. W. A. Hulse, H. Van Wyckoff, W. Schwab, Dr. I. W. Furman, J. J. Gibson, C. C. Brewster, G. E. Raynor and J. W. Ennis.

**Motor Boat Club of Buffalo, Buffalo, N. Y.** The October number of the "Log," the official publication of this club, contains an appeal to members to use their influence toward securing suitable dockage for club members. The government lock at Black Rock has been finished and the club landing station at Bridge Street will soon have to be abandoned when the new ship canal is completed. The club has a reservation of about 1,000 feet on the government wall, but inasmuch as this is above the lock it does not suit all requirements. The "Log" urges that a committee be appointed to take charge of the matter, and it is hoped that the city can be induced to build a public dock either at the foot of Austin Street, which is asphalted to the river bank, well lighted and near the street cars, or to build a long, narrow dock about 200 feet from the shore out into the slip.

**Norristown Motor Boat Club, Norristown, Pa.** At the last meeting of this club it was announced that application has been made for a charter. Thirty-five members were present and the meeting was held on board the recently purchased house-boat. A successful season has been the result of the club's efforts and many plans have been made for next year.

**Mill Creek Yacht Club, Brooklyn, N. Y.** This club was formed on September 3d with 42 members and in the short time since then the membership has increased to 95. The headquarters of the club at present are at Warren's Hotel, Flatlands Bay, and the officers are as follows: Commodore, C. G. Morse; vice-commodore, Gus Flaig; rear-commodore, Charles Klugherz; fleet captain, R. Spielman; treasurer, H. Lewinski; secretary, W. E. Peckham; sergeant-at-arms, Louis Fuchs.

**St. Augustine Power Boat Club, St. Augustine, Fla.** The success of the speed boat meet to be held in April over the Matanzas course seems to be assured as there are already entered ten boats averaging over 20

miles an hour. This number is exclusive of local boats and those from the north. Charles A. Clark, who piloted Dewey in the Palm Beach races, was here a short time ago and stated to the secretary of the Power Boat Club that there are seven boats in Jacksonville capable of more than 20 miles an hour which are sure starters in the race. It is hoped also to have some of the British hydroplanes on hand.

**Sodus Bay Yacht Club, Sodus Point, N. Y.** The annual meeting of this club was held recently and the attendance showed the keen interest manifested this year in the welfare of the organization. Commodore C. T. Bloomer presided, and the regular reports of committees were disposed of in order. The building committee gave a special report, advocating the enlargement of the club house, and it was decided to do this at once, in order to accommodate the increasing membership and to provide more adequate space for social gatherings. The committee was authorized to begin the work at once, in order to have the building in shape for the season of 1911. The question of membership was discussed, and it developed that several had hesitated to apply for membership thinking new members were not especially desired. The very opposite is the case, and all members as well as officers are provided with application blanks, which they will furnish to any desiring membership in the club. During the season thirty new names have been added to the list of members. The annual election resulted as follows: Commodore, H. M. Doubleday, Jamaica; vice-commodore, Arthur G. Sill, Sodus Point; secretary and treasurer, B. B. Parsons, Syracuse; fleet captain, W. H. Cook, Sodus Point; fleet surgeon, Dr. Kelly, Newark; trustees, A. L. Foote, C. P. H. Vary, C. T. Bloomer, T. E. Elliott and Peter Kemper, Jr.; regatta, motor boat, and house committees will be appointed later by the commodore.

**Cape Vincent Yacht Club, Cape Vincent, N. Y.** This club has just completed its third successful season. At the recent annual meeting the following officers were elected: Commodore, F. W. Sackett; vice-commodore, E. E. Maxwell; rear-commodore, G. C. Sherman; fleet captain, L. L. Peo; secretary, C. S. Holcombe; treasurer, A. L. Dezenegremel; directors, C. T. Sackett, C. K. Green and B. S. Miller. Cape Vincent is on the River St. Lawrence two and a half miles below Lake Ontario. The club house is in the center of the village, a hundred yards from the post office and stores, behind the government breakwater, which is over 1000 feet long and which affords excellent protection. There are several docks near by for visitors.

# Five Thousand Dollar Motor Boats.

The Seventh Instalment of the Series "How Much Does a Motor Boat Cost?"  
Boats That Cost Complete From \$2,000 to \$5,000 and the Engines for Them.

This instalment of the "Cost Series" includes boats that may be bought for prices ranging from \$2,000 to \$5,000. Next month the \$5,000-\$10,000 boat will be considered and thence we will continue by stages until the \$100,000 production has been described. We have endeavored to include, on this and the following page, all the regular stock models that come within this class, and to keep this department representative of the entire trade so that it may be of the utmost value to the motor boatman and prospective motor boatman, we wish to emphasize what we have said already. We want the manufacturers of motor boats and engines to send us at once photographs and descriptions of whatever they manufacture that sells for a price above the limits of this month's instalment so that it may be included in a future issue.—EDITOR.

## 35-Foot Crosby Cruiser.

DANIEL CROSBY & SON, Osterville, Mass. The trunk cabin cruiser shown in the illustration is strongly and heavily built with a view of being able to withstand any weather. She is 35 feet overall by 11 ft. 6 in. beam, and has full headroom throughout the cabin. There is a 3 ft. stowage space forward for water tank and cables, a 7 ft. double stateroom fitted with spring berths, a main cabin 13 ft. long, a 4 ft. toilet room and large galley with built-in refrigerator, all completely equipped. The cockpit is 9 ft. long and self bailing. The motor is a two cylinder, two cycle, heavy duty model, with reverse gear and magneto, and with both under water and above water exhausts. It is controlled from the steering seat. Price with complete cruising outfit, except linen and dishes, \$2,500.

## Cuthbert 43-Footer.

A. G. CUTHBERT, Chicago, Ill. The boat shown in the process of construction is a 43-footer, of 10 ft. beam and 36 in. draft. It has double cabins, one of which is fitted with Pullman seats and berths, and two toilet rooms, one of which has a bath tub. Price of the boat runs from \$3,200 to \$4,500, according to finish, with any motor installed at the net price of the motor additional. Another popular model which may be duplicated for a price within this installment is a 37-footer, of 8 ft. beam and 30 in. draft, equipped with a 24-horse, four cylinder, four cycle motor, lighted by electricity and thoroughly equipped. The prices range from \$2,200 to \$3,000, with any engine installed at its net cost.

## The Defoe 65-Footer.

DEFOE BOAT & MOTOR WORKS, Bay City, Mich. The accompanying illustration is of a Defoe 65-foot cruiser, built for R. L. Long, of Denver, Colo., who will use it on the Gulf of Mexico during the winter. The boat is 65 ft. overall, with a beam of 13 ft., and is equipped with a 40 h. p. heavy duty Dorman motor. The boat is a thoroughly seaworthy model and, with complete equipment, may be duplicated for \$4,500.

## Detroit 35-Footer "Bug."

DETROIT BOAT CO., Detroit, Mich. The illustration is of the 35-foot Express boat "Bug," which is equipped with a motor of 30 h. p., and which has attained a speed of 20 miles per hour. The beam is 6 ft. 6 in. and the draft 23 in. The price with the regular equipment is \$4,700. A 35-foot raised deck cruiser, the Mauretania, of 8 ft. 6 in. beam and 30 in. draft, equipped with a 20 h. p. 2 cylinder, heavy duty Detroit, sells for \$4,500. The head room in the cabin is 6 ft., and sleeping accommodations are for six persons.

## 35-Foot Ginman Cruiser.

GINMAN BOAT CO., Muskegon, Mich. The design, by Carlton Wilby, is of a 35-foot cabin cruiser, which is being built by this company for Mr. John E. Crate, and which may be duplicated for \$2,500. The boat is heavily framed in oak and is planked with oak to the water line. All fastenings are of bronze or copper, and the hull is copper riveted. The cabin is divided into a pilot house, main saloon, galley and toilet. The sashes and screens are arranged to drop into pockets making an ideal boat for hot weather cruising. A wide range of motors is offered to choose from and the interior arrangement will be varied in minor details without additional cost.

## The 30-Footer Hanksraft.

HANKSCRAFT COMPANY, Chicago, Ill. The boat in the accompanying illustration is the 30-foot Hanksraft which sells for \$2,500. The boat is built along fast runabout lines with the motor installed in a separate compartment under folding hatches in the forward deck. The boat is completely controlled from the bulkhead by the automobile system, and the cockpit is large and, with the exception of a lazy back seat across the after end, is left open for the use of chairs. The ventilation of the engine compartment is unique, air being taken in at the ventilator forward, passing through the engine compartment beneath the cockpit floor, and out through an opening in the deck aft. A 25 h. p., four cylinder, four cycle Hanksraft patent tilting motor with aluminum alloy base is installed.

## The Homer 45-Footer.

ARTHUR P. HOMER, Boston, Mass. The design shown herewith is an example of what may be had in the cruiser line for \$5,000. The boat is 45 ft. overall by 10 ft. 9 in. beam and 3 ft. 8 in. draft. The main cabin is in the middle of the boat, and is completely fitted with sideboard, locker, dining table and wide extension berths for sleeping four persons. In the forward part is a

large combined forecabin and galley, completely fitted. The engine is just forward of the cockpit, and has a small work bench and lockers to port and an enclosed toilet room to starboard. The cockpit is large and self-bailing, and the owner's cabin and private toilet room occupy the stern of the boat. Steering is done either from the cockpit or from the bridge forward. The power plant is a 40 h. p. four cylinder, heavy duty Sterling, giving the boat a speed of 11½ knots.



35-foot ELCO express launch.



Nock, 38-foot runabout.



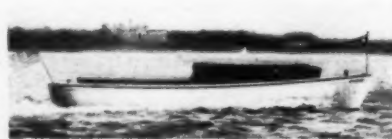
Peter Pan III, a Reliance runabout.



Matthews 35-foot runabout.



The Hanksraft.



Moore 36-foot cruiser.



Detroit 35-foot "Bug."

## The ELCO Models.

ELCO, Bayonne, N. J. A number of models come within this class, two of which are shown in the accompanying illustrations. The 35-foot ELCO express launch of 5 ft. 3 in. beam is of mahogany, copper fastened and of special construction. The joiner work is of mahogany and the equipment includes brass deck hardware, metal engine covers, divan seat and back cushions, chairs, rubber floor mat, sailing lights, electric Siren whistle, fenders, bell, anchor, life preservers, copper gasoline tank. She is equipped with a 60 h. p. six cylinder ELCO motor with magneto, is guaranteed for 22 miles per hour and sells for \$4,000. The 40 ft. raised deck cruiser of 10 ft. beam is planked with cedar copper fastened throughout, with mahogany outside finish and white enamel interior finish. There are five berths and the equipment includes plumbing, deck hardware, awnings, signal masts, galvanized steel gasoline tank; without fittings and upholstery. This boat may be had with either 20, 24 or 40 h. p. four cylinder ELCO motor, of various r. p. m., with prices ranging from \$4,350 to \$5,000, according to motor. A 36-foot hunting cabin launch of 10 ft. beam, planked with cedar, copper fastened, finished outside in oak and inside in white enamel with four berths and similar equipment may be had with 25, 24 or 18 h. p. motors of various r. p. m., the prices ranging from \$3,450 to \$4,000, according to motor. A 32-foot standing cabin launch of 6 ft. 6 in. beam with motor installed forward under hatch and with forward cockpit enclosed with drop sash windows is finished throughout in mahogany, including decks and equipped with a 40 h. p. four cylinder ELCO with magneto, and with a guaranteed speed of 15 miles, sells for \$3,250. A 30-foot runabout equipped with the same power and similar to the boat just described is guaranteed for the same speed and sells for \$2,500. A 30-foot express launch with cedar planking copper fastened and finished entirely in mahogany is equipped with a 40 h. p. ELCO and magneto, giving her a guaranteed speed of 20 miles and sells with complete equipment for \$3,000. The 21-foot express tender equipped with the same motor maintains a guaranteed speed of 22 miles and sells for \$3,000. This boat has a hoisting weight of 1,500 pounds. The hull is planked and finished entirely in mahogany and is of special construction to withstand hoisting to the davits.

## Two Electric Launches.

THE ELECTRIC LAUNCH CO., Bayonne, N. J. The 36 ft. standing cabin launch, with cockpits under the extensions of the cabin roof fore and aft, and of the usual ELCO construction, is equipped with a storage battery of 25 miles radius on one charge, maintains a speed of 8 miles per hour, and sells for \$5,000, fully equipped. The 30 ft. open model, with a radius of 60 miles and a speed of 7 miles per hour, sells, completely equipped, for \$2,500.

## Matthews 43-Footer.

THE MATTHEWS BOAT CO., Port Clinton, Ohio. One of the accompanying illustrations shows a 43-footer of the raised deck type, of 10 ft. beam. Arrangements include stateroom forward, lavatory compartment, wardrobe, main cabin with two double extension berths, motor room and galley, self bailing cockpit and 20 h. p. motor arranged for one man control. Price \$4,000. A 45 ft. double house cruiser with bridge deck between and cockpit aft, sleeping four in the main cabin, with motor room, galley, crew's quarters and toilet, sells for \$5,000, equipped with a 25 h. p. motor. A special 38 by 9 ft. 6 in. cruiser with 5 berths and complete cruising equipment sells for \$3,000, with 25 h. p. motor. The runabout illustration shows a 35-footer with a guaranteed speed of 22 miles per hour with 65 h. p. six cylinder motor, and selling for \$3,500. A 30-foot semi-speed boat, with guaranteed speed of 30 miles per hour, with 40 h. p. motor and complete inventory, sells for \$2,200. A 31 ft. cruiser of the raised deck type with ports forward and windows aft, with galley, lavatory compartment and sleeping quarters for two, with 18-25 h. p., sells for from \$2,500 to \$3,000. A 35 by 8 ft. day launch with standing cabin and cockpits under cabin roof fore and aft, 25 h. p. motor housed forward under hood, and speed of 12 miles per hour, sells for \$4,000. There are a number of other plans of 40 to 50 ft. boats costing between \$4,000 and \$5,000, and in which any motor preferred by the customer will be installed.

## Duplicates of Elmo II.

MILTON BOAT WORKS, Rye, N. Y. This company is now prepared to furnish duplicates of Elmo II, the 34 ft. winner of the 1909 and 1910 Marblehead, the 1910 Block Island and Albany races, for \$2,750. The dimensions of the boat are 34 ft. overall, 8 ft. 6 in. beam, 3 ft. 3 in. draft, with 5 ft. 11 in. headroom in the cabin. The hull is of unusually heavy construction, the stem, keel, etc., being of white oak, the planking of white cedar, the decks of white pine and all other outside bright work of mahogany. The in-



terior finish is in cypress paneled and finished bright. All fittings are of bronze or brass, and Goblet Dolan plumbing is used throughout. A 12 h. p. Standard motor is installed with reverse lever and controls convenient to steering wheel. Price includes linoleum floor covering, air filled pantosote cushion, galvanized sailing and anchor lights, ensign, boat hook, bell, fog horn, mooring lines, fenders and life preservers.

### 36-Foot Moore Cruiser.

MOORE BOAT WORKS, Wayzata, Lake Minnetonka, Minn. The boat shown in the illustration is a 36-footer of 8½ ft. beam with a capacity of 8 to 10 persons, and speed of 11 miles per hour. The boat is of the hunting cabin type, with interior arrangement as follows: toilet room in the eyes galley next aft, and main cabin amidships. The cabin has 6 ft. of head room and is equipped with extension berths on either side and clothes closet. The cockpit is exceptionally large and the motor is a four cylinder, four cycle, 20 h. p. Campbell. The price is \$2,290.



The Wright 34-footer.



35-foot Crosby cruiser.



Matthews 43-footer.



The F. S. Nock 40-footer.



The Cuthbert 43-footer.

### Niagara 35-Footer Cruiser Hull.

NIAGARA MOTOR BOAT CO., North Tonawanda, N. Y. This boat which appears as one of the accompanying illustrations is 35 ft. over all by 8 ft. beam, with compromise stern and hunting cabin. The forward deck is 5 ft. 6 in. long, the main cabin is 13 ft. long, the engine room 7 ft., the cockpit 6 ft., and the after deck 3 ft. 6 in. Headroom in the cabin is 6 ft. 1 in., and the draft of the hull is 26 in. If desired, this boat may be had with raised deck forward, continuing aft as a trunk cabin with windows. The price of either boat, ready for the motor, is \$1,200.

### The F. S. Nock Boats.

FREDERIC S. NOCK, East Greenwich, R. I. The mahogany runabout shown in one of the accompanying illustrations is a 38-footer of 4½ ft. beam and 1 ft. draft. Equipped with a 60 h. p. motor, the speed is 24 miles per hour, and the price, with complete fittings, \$3,200.

The other illustration is of a 40 ft. hunting

cabin cruiser, 40 ft. by 9 ft. by 3 ft., which, equipped with an 18 h. p. three cylinder engine, maintains a speed of 10-11 miles. The galley is forward, the saloon with two extension berths next aft with engine room and toilet compartment amidships, the former containing one berth. The price complete is \$3,800. A twin screw, raised deck cruiser, 40 ft. by 10 ft. by 2½ ft., with two 10 h. p. two cylinder engines, does 10 miles per hour. There is a stateroom forward with two single berths, a saloon with two extension berths, galley and toilet and a pipe berth in each engine room. Price, complete \$3,500. A raised deck-trunk cabin cruiser, 43 ft. by 10 ft. by 3 ft., equipped with an 18 h. p. three cylinder engine does 10 miles per hour, and, sells with complete inventory, for \$4,500. A raised deck day cruiser, 45 ft. by 9 ft. 6 in. by 3 ft. with large cockpit, and bridge deck and equipped with a six cylinder, 45-65 h. p. motor, maintains a speed of 12-13 miles per hour and sells for \$5,000, with complete inventory and two tenders, one power and one rowing. A 33 ft. runabout of 5 ft. beam and 1 ft. draft, equipped with a 4 cylinder 40 h. p. engine giving it a speed of 24 miles an hour, sells complete with auto top for \$3,000.

### The Palmer Cruisers.

PALMER BROTHERS, Cos Cob, Conn. The accompanying profiles and plan illustrate two cruisers of the same design, one a 40 footer of 8 ft. beam, and the other a 45-footer of 9 ft. beam. The interior arrangement, which will be altered if desired, consists of a saloon forward with berths along either side and an engine room amidships in which the galley is on the port side and a folding berth on the starboard side. An enclosed toilet compartment with folding lavatory is on the port side and a refrigerator on the starboard side. The 40-footer equipped with a 25 h. p. Palmer motor sells for \$3,000, and the 45-footer with a somewhat larger motor of the same make, sells for \$3,500.

### The Peterson 35-Footer.

JULIUS PETERSON, Nyack, N. Y. The design on the following page is of a raised deck 35-footer of 9 ft. beam with two suggested interior arrangements. In both of these there is a toilet compartment forward. In the first one there are two cabins, which may be separated by curtains or left open and with extension berths along either side with lockers and shelves above them. The motor is a little aft of amidships in the aftermost compartment of the cabin, with ice-box, sink, etc., to port and a two burner galley stove, companionway and locker to starboard. In the other arrangement, the galley and motor compartment is forward of the two cabins and the companionway is amidships. In both arrangements the gasoline is carried in two cylindrical tanks beneath the cockpit floor. The construction is of oak planked with cedar and copper fastened and the finish is in mahogany and white enamel. With either arrangement complete with cushions, fittings, ropes, anchor and sidelights the price is \$2,700.

### Several Racine Models.

RACINE BOAT MFG. CO., Muskegon, Mich. The accompanying illustration is of a 40-footer of 8 ft. 6 in. beam, 2 ft. 9 in. draft, with accommodations for 9 persons, and equipped with a 16 h. p. motor, which gives it a speed of 9 miles per hour, the price is \$3,500. A 31-foot raised deck cruiser with a 12 h. p. motor sells complete for \$2,500. The 45 ft. cruising glass cabin boat, with 24 h. p. motor sells for \$3,500. A 36 foot Special cruiser, with a 25 h. p. motor sells for \$2,500. A 40 ft. glass cabin cruiser with a 12 h. p. motor sells for \$2,500. A 50 ft. glass cabin cruiser, equipped with a 24 h. p. motor, sells for \$4,000, and a 50 foot house boat with a 24 h. p. motor sells for \$3,500.

### The Red Wing Models.

RED WING BOAT MFG. CO., Red Wing, Minn. In the illustration is shown a 40 ft. glass cabin cruiser of 8 ft. 6 in. beam and 26 in. draft. Equipped with a 36 h. p. six cylinder, four cycle Red Wing motor, the speed is 12 miles per hour and the price \$4,500. A 50 foot passenger boat with standing canopy, equipped with a 48 h. p. six cylinder Red Wing, seating forty-four persons and capable of a speed of 15 miles per hour, sells in Grade A for \$3,600, and in Grade B for \$3,400. A similar boat 45 ft. in length, equipped with a 36 h. p. motor and seating 40 persons sells in grade A for \$3,000 and in grade B for \$2,800. A 38 ft. cabin cruiser of 8 ft. beam and 28 in. draft, equipped with a 12 h. p. double cylinder Red Wing, sells for \$3,200. A 35 foot speed boat equipped with a 48 h. p. six cylinder Red Wing, two cycle motor sells for \$2,250 and a 31 footer of the standing cabin type with cockpits fore and aft, equipped with a 24 h. p. Red Wing, sells for \$2,500.

### Reliance Speed Runabout.

RELiance MOTOR BOAT CO., New York City. The boat shown in the illustration is the well known Peter Pan III winner of time prize, New York to Poughkeepsie and return. Her length is 28 ft., beam 4 ft. 3 in., planking of selected mahogany with batten seam construction, decks of narrow strip mahogany with yellow inlaid seams. The passenger cockpit is roomy, with two thwart seats, one for steering and one across the after end with lazy backs. There is room for four wicker chairs in the cockpit so that eight persons may be carried comfortably. The motor is a 4 cylinder, 40 h. p., four cycle model, installed under hinged hatches forward, and the control is of the automobile type from the bulkhead. The price is \$2,500 complete.

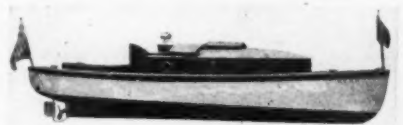
### Valley 43-Footer.

VALLEY BOAT & ENGINE CO., Saginaw, Mich. This is a raised deck 43-footer of 10 ft. beam, with bridge deck forward and trunk cabin

aft. The motor is installed in the forward compartment separate from the living quarters, and the control and steering are done from the bridge deck. The galley is in the forward part of the cabin with a large stateroom and toilet room at the after end of the saloon. The seats on either side of the saloon are convertible into berths. There are companionways at the forward and after ends and the windows in the trunk cabin are arranged to drop into pockets. The saloon is finished in mahogany and the trunk cabin exterior is of the same wood. Equipped with a 24 h. p. motor and all fittings, the price is \$3,350.

### Wright 34-Footer.

WRIGHT BROTHERS, Newport, Ky. The boat illustrated is a 34 ft. runabout of 4 ft. 4 in. beam. The boat has a long turtle deck forward, extending to a point almost amidships and under which the motor is installed. The cockpit is roomy, there being two cross seats, one for the steersman, and one across the after end with room for several wicker chairs. The stem, keel, and shaft log are of white oak and the ribs are of long grained elm. The planking is of white pine or white cedar, and



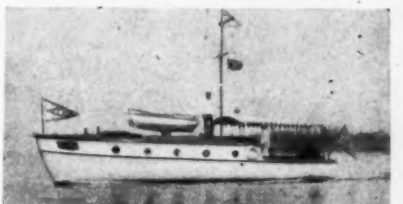
36-foot Niagara hull.



The ELCO 40-footer.



Red Wing, glass cabin cruiser.

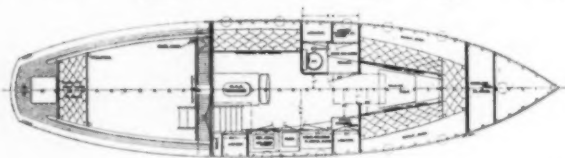
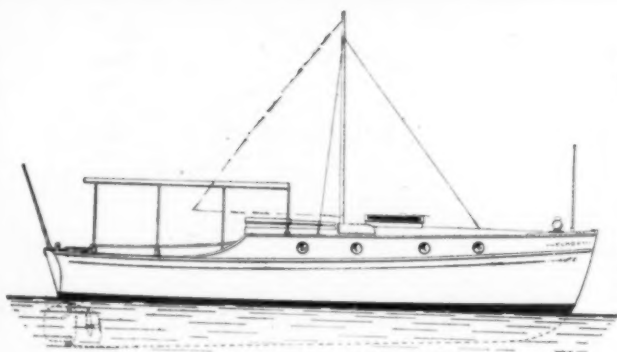


The Racine 40-footer.

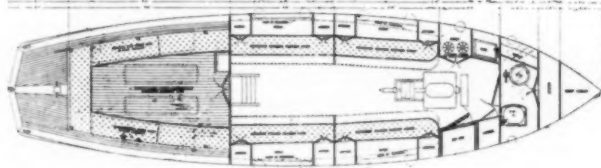
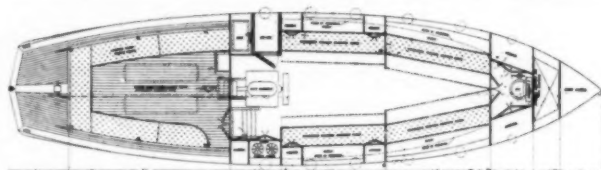
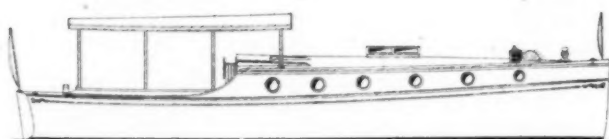


Defoe, 65-foot cruiser.

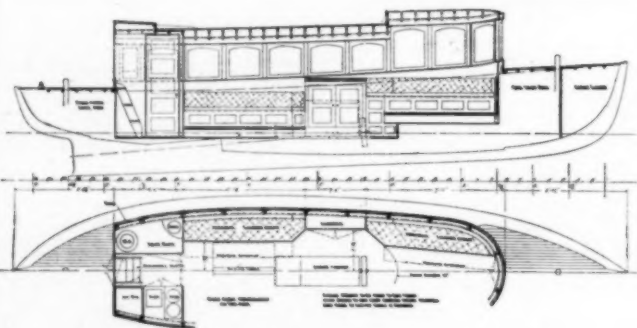
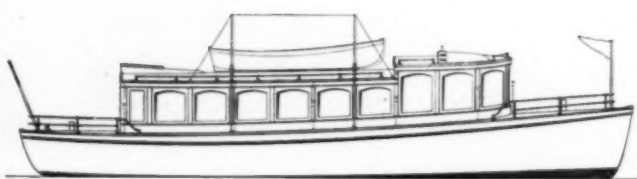
the ribband carvel method has been employed, all fastenings being brass screws. The engine bearers extend fore and aft as far as possible, being notched down over the ribs and brass screw fastened. The decks, hood, coaming, seats, bulkheads and interior woodwork are of African mahogany fastened with brass screws and plugged wherever possible. The motor is either a 6 cylinder, 60 h. p. H. L. F. Trebert or a 6 cylinder, 50 h. p. Rochester with magneto, reverse gear, bronze shaft and propeller, rear starting device, automobile steering wheel and control mounted on the bulkhead. The rudder is hung outboard on the transom and it and its hangings together with the quadrant are cast of phosphor bronze. The equipment includes an auto top with side curtains and storm front, a complete set of Kenyon cushions, Klaxon electric whistle, polished brass bow, side and stern lights fitted with Tungsten bulbs, brass ventilator, Durkee fire extinguisher and all other necessary equipment. The price, equipped as above is \$2,500. Planked with mahogany and finished in the natural wood the price is \$3,000, with the same equipment.



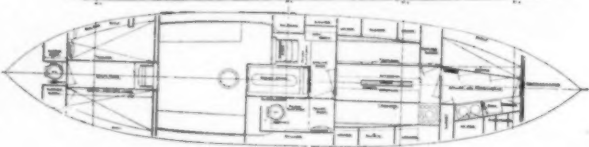
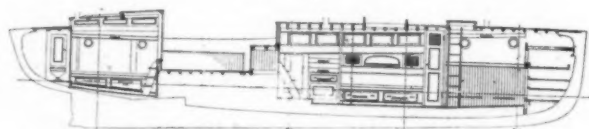
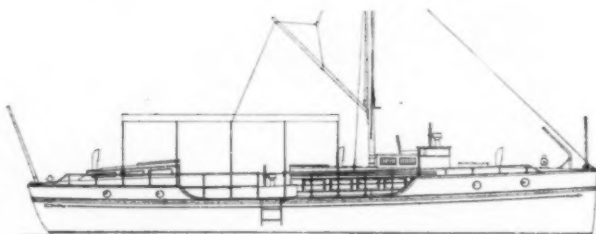
Elmo II, the Milton 34-footer.



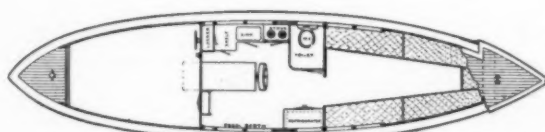
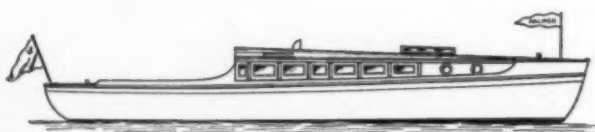
Petersen 35-footer with two interior arrangements.



Ginman 35-footer designed by Carlton Wilby.



45-footer designed by Arthur P. Homer.



Profile and arrangement plan of the 40 and 45-foot cruisers designed and built by Palmer Brothers.

## Buyers' Reference and Export Number.

THE December issue of MoToR BoatinG will be the Annual Buyers' Reference and Export Number, and will be devoted to the Motor Boat Industry and its products from the viewpoint of the purchaser and prospective purchaser, in whatever corner of the Globe he may be. It will also contain MoToR BoatinG's Annual Review of Motor Boat Racing for 1910, besides a number of special articles by authorities in their several fields. Because of the great amount of special material in this number, we shall be obliged to omit the next installment of the series "How Much Does a Motor Boat Cost?" while retaining the other regular department features. The series will be resumed in the January issue, and the cost limits will be so adjusted that the series will be completed as originally planned.



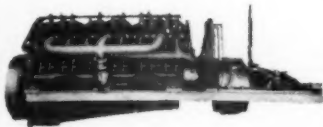
# Motors for \$5,000 Motor Boats.

In this instalment, which is the seventh in the "Motor Boat Cost Series" we have endeavored to include all motors on the market which might be installed in motor boats, costing fully equipped between \$2,000 and \$5,000. As an arbitrary price limit for the motors themselves we have taken \$2,000 and, therefore, as the limit of last month's installment was \$1,000, the motors herein described range in price from \$1,000 to \$2,000. In compiling this matter we have endeavored to include all motors that come within these figures, and we again request the manufacturers to co-operate with us by supplying us with photographs, descriptions and net prices of the motors they manufacture which sell for prices above \$2,000, so that they may be inserted in future issues. In sending us this matter the manufacturer will incur no obligation of any sort, but will be conferring on us a favor. We want this series to be representative of the entire trade and therefore of the greatest possible benefit to the motor boatman and prospective motor boatman.—EDITOR.

## The ELCO 60 H. P.

(Motor with timer and carburetor \$1,150, with complete equipment, including reverse gear starting device, etc., \$1,500.)

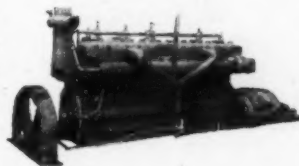
ELECTRIC LAUNCH CO., Haddonfield, N. J. Six cylinders cast in pairs, four cycle, jump spark ignition, bore 5 inches, stroke 4 1/2 in., all valves on the same side, aluminum crank case. Designed for high speed launch service and weighs 650 pounds. Can be furnished with reverse gear, starting ratchet, thrust bearing, propeller, spark plugs, magneto, and storage battery for \$475 extra.



## The 60 H. P. Clifton.

(Motor with governor, reverse gear, etc., \$1,860; with complete electrical and propeller equipments, \$2,080.)

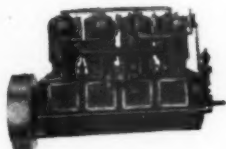
CLIFTON MARINE MOTOR WORKS, Cincinnati, O. Six cylinders, four cycle, jump spark ignition, bore 6 1/2 in., stroke 7 in., normal speed 400 r.p.m., weight 3000 pounds. The four cylinder 28 h. p. model also comes within this class, selling for \$1,100 and \$1,250 with similar equipments. This model weighs 1800 pounds, with a bore and stroke of 6 1/2 and 7 inches, respectively.



## The 100 H. P. Anderson.

(Motor, with complete electrical and propeller equipments, including reverse gear and mechanical oiler, \$1,750.)

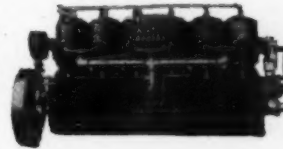
ANDERSON ENGINE CO., Shelbyville, Ill. Four cylinders cast singly, four cycle, jump spark ignition, bore 9 1/4 inches, stroke 11 inches, speed 400 r. p. m., weight 5000 pounds, exhaust and intake valves on opposite sides. The 75 h. p. three cylinder model of the same cylinder dimensions weighs 4000 pounds and sells with similar equipment for \$1,350.



## The 45 H. P. Doman.

(Motor complete with electrical and boat equipments, including reverse gear, Apple dynamo, storage battery, etc., \$1,160.)

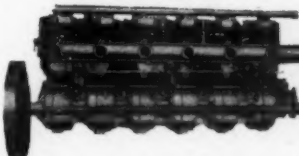
THE H. C. DOMAN CO., Oshkosh, Wis. Six cylinders, four cycle, jump spark ignition, bore 6 in., stroke 6 in., normal speed 535 r.p.m., weight with reverse gear 2126 pounds. The 55 h. p. four cylinder model with similar equipment sells for \$1,660, the 40 h. p. four cylinder heavy duty sells for \$1,350, and the 30 h. p. three cylinder heavy duty sells for \$1,165.



## The 60-90 H. P. Elbridge.

(Motor with electrical equipment and iron fittings, \$1,500; with aluminum fittings, \$1,650.)

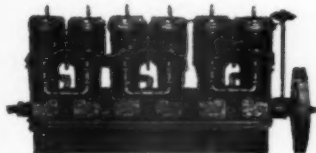
ELBRIDGE ENGINE CO., Rochester, N. Y. Six cylinders, two cycle, jump spark ignition, bore 5 1/2 in., stroke 5 1/2 in., height above bed 18 1/2 in., depth below bed 5 1/2 in., diameter of flywheel 18 in., weight with aluminum fittings 720 pounds, reverse gear \$120 extra. The 60-90 h. p. "Featherweight" of 4 1/2 in. bore and 4 1/2 in. stroke weighs 250 pounds and sells for \$1,850.



## 60 H. P. Buffalo Arrow.

(Motor complete with electrical equipment, \$1,200.)

BUFFALO AUTO-TRUCK AND MOTOR CO., Buffalo, N. Y. Six cylinders, two cycle, bore 7 inches, stroke 8 in., diameter of flywheel 20 inches, minimum speed 100 r.p.m., normal speed 450 r.p.m., weight 925 pounds. The 40 h. p. four cylinder, four cycle, model sells for \$1,500.



## The 50-60 H. P. Brownell.

(Motor complete, \$1,200; with complete electrical and propeller equipments, including reverse gear, \$1,500.)

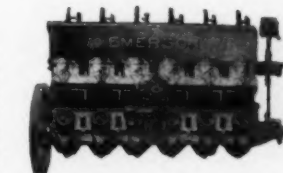
F. A. BROWNELL MOTOR CO., Rochester, N. Y. Four cylinders, four cycle, jump spark ignition, bore 5 1/2 in., stroke 6 1/2 in., normal speed, 900 r.p.m., diameter of flywheel 20 in., height from center of crank shaft 20 in., diameter of crank shaft 2 1/2 in., weight complete 1090 pounds.



## 60 H. P. Emerson Racer.

(Motor with equipment, \$2,000.)

EMERSON ENGINE CO., Alexandria, Va. Six cylinders, two cycle, jump spark ignition, bore 5 in., stroke 5 in., weight 298 pounds, speed 1200 r.p.m. The 40-50 h. p. regular model of 5 in. bore and stroke turns from 150 to 1500 r.p.m., weighs 350 pounds, and sells for \$1,500 complete.



## The Buffalo 54 H. P.

(With complete electrical and boat equipment, including reverse gear and magneto, \$1,988.)

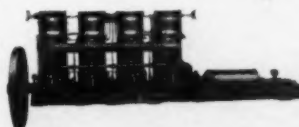
BUFFALO GASOLINE MOTOR CO., Buffalo, N. Y. Six cylinders cast in pairs, four cycle, jump spark, or make-and-break ignition, bore 7 in., stroke 9 in., speed 350 r.p.m., weight 4125 pounds. Several other models come within this class, viz: A thirty h. p. of the regular type selling complete with reverse gear for \$1,504, a 40 h. p. for \$1,844, a 60 h. p. high speed for \$1,680, a 90 h. p. high speed for \$2,000, a 40 h. p. Auto-marine high speed six cylinder for \$1,000, and a 36 h. p. heavy duty for \$1,340. Above prices include reverse gears and complete equipment.



## Fay & Bowen 44 H. P.

(Motor with reversible propeller and complete electrical equipment, \$1,340.)

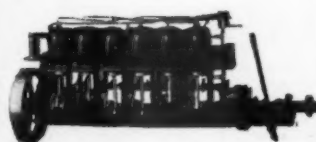
FAY & BOWEN ENGINE CO., Geneva, N. Y. Four cylinders, two cycle, make-and-break ignition, bore 6 1/4 in., stroke 6 1/4 in., normal speed 500 r.p.m. The three cylinder, 32 h. p. has a bore and stroke of 6 1/4 in., runs normally at 500 r.p.m. and sells with the equipment as above for \$1,030. These models weigh 2480 pounds and 2090 pounds, respectively.



## 42 H. P. Campbell.

(Motor with complete boat and electrical equipment, including reversing clutch, \$1,054.)

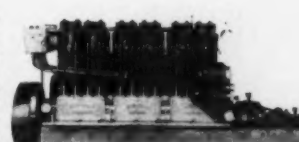
CAMPBELL MOTOR CO., Wayzata, Minn. Six cylinders, four cycle, jump spark ignition, bore 5 1/2 in., stroke 6 1/2 in., normal speed 500 r.p.m., weight 1650 pounds. The 28 h. p. four cylinder model of 5 1/2 in. bore and 6 1/2 in. stroke sells for \$1,184, and the 40 h. p. four cylinder of 6 1/2 in. bore and 7 1/2 in. stroke sells for \$1,662. The motors are all of the open base construction.

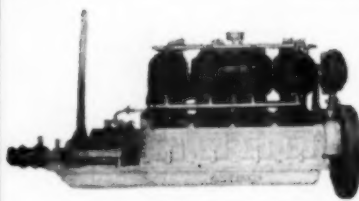


## The 40-60 H. P. Frisbie.

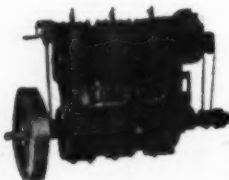
(Motor with electrical equipment, \$1,350.)

FRISBIE MOTOR CO., Middletown, Conn. Six cylinders, four cycle, jump spark ignition, 6 in. bore by 6 in. stroke, cylinders cast in pairs, mechanical oiler, Schebler carburetor, 40 h. p. at 500 r.p.m., 60 h. p. at 600 r.p.m., maximum speed 1000 r.p.m. The 35 h. p. 6 cylinder model of 4 1/2 in. bore and 5 in. stroke sells for \$1,050.

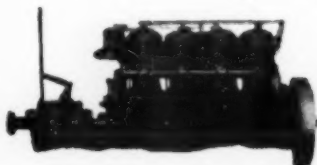


**The 18-22 H. P. Speedway.**

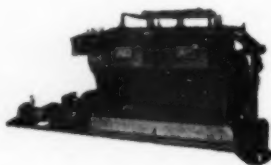
(Motor complete, \$1,400.)  
GAS ENGINE & POWER CO. AND CHARLES L. SEABURY & CO., CONS., New York City. Four cylinders, four cycle, make-and-break or jump spark ignition, bore 4½ in., stroke 5 in., weight 990 pounds. The 12-16 four cylinder model of 4 in. bore and 4½ in. stroke, weighs 580 pounds and sells for \$1,200; the 24-32 h. p. six cylinder model weighs 1,300 pounds and sells for \$2,000.

**50 H. P. Goshen.**

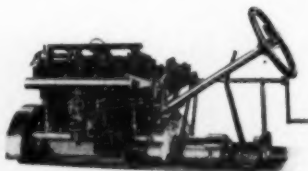
(Motor with electrical equipment, \$1,160; with propeller equipment, \$1,200; for salt water, \$1,220.)  
GOSHEN MOTOR WORKS, Goshen, Ind. Three cylinders, two cycle, jump spark ignition, bore 7 in., stroke 8½ in., diameter of flywheel 30 in., diameter of crank shaft 2½ in. The reverse gear may be had for this model for \$150 extra and the Atwater-Kent ignition system for \$18 extra.

**Holliday 40 H. P.**

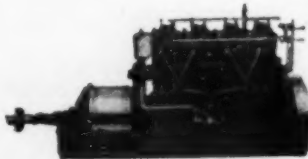
(Motor complete with electrical equipment, reverse gear and propeller equipment, \$1,200.)  
HOLLIDAY ENGINEERING CO., Chicago, Ill. Four cylinder, four cycle, jump spark ignition, bore 7 in., stroke 9 in., normal speed 500 r.p.m., weight 2500 pounds, diameter of flywheel 24 in., height from center of shaft 26 in., equipment includes 13 tube force feed lubricator, Schebler carbureter, etc.

**The 50-60 H. P. Holmes.**

(Motor complete with Bosch magneto and electrical equipment, \$1,872.)  
THE HOLMES MOTOR CO., West Mystic, Conn. Four cylinders cast in pairs, four cycle, long stroke, open base construction, jump spark or make-and-break ignition, bore 6 in., stroke 8½ in., speed 550 to 750 r.p.m., weight 1325 pounds. The 35-40 h. p. six cylinder model of 4½ in. bore and 6¼ in. stroke, weighs 800 pounds and sells for \$1,597. The above models with reverse gears sell for \$1,992 and \$1,669, respectively.

**The 40 H. P. Jencick.**

(Motor complete with electrical and propeller equipment, \$1,605.50.)  
JENCICK MOTOR MFG. CO., Port Chester, N. Y. Four cylinders, four cycle, jump spark ignition, bore 5 in., stroke 5½ in., speed 1000 r.p.m., weight 720 pounds. Two other high speed models, viz: the 28 h. p. four cylinder and the 38 h. p. six cylinder model come within this class, selling for \$1,341.60 and \$1,804, respectively, and three medium speed motors, viz: a 15 h. p. four cylinder, a 21 h. p. six cylinder, and a 24 h. p. four cylinder selling for \$1,200, \$1,640, and \$1,460, respectively.

**40 H. P. Lamb Heavy Duty.**

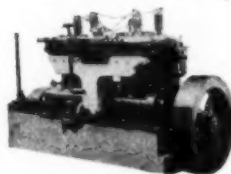
(Motor complete with electrical and propeller equipment \$1,450.)  
LAMB BOAT & ENGINE CO., Clinton, Ia. Four cylinders, four cycle, jump spark ignition, normal speed 450 r.p.m., weight 2150 pounds. The 40 h. p. six cylinder model turns at 550 r.p.m., weighs 1,650 pounds and sells for \$1,500. The six cylinder 65-70 h. p. high speed model sells for \$1,500.

**The 25-30 H. P. Ralaco.**

(Motor complete with electrical and propeller equipment, \$2,000.)  
S. M. JONES CO., Toledo, Ohio. Four cylinders, four cycle, jump spark ignition, bore 5 in., stroke 7 in., normal speed 500 r.p.m., weight 3300 pounds. The 23-25 h. p. two cylinder model with 7 in. bore and 9 in. stroke turns at 375 r.p.m., weighs 2200 pounds, and sells for \$1,600. The 15-20 h. p. four cylinder model of 4 in. bore and 6 in. stroke turns at 600 r.p.m., weighs 1375 pounds and sells for \$1,200.

**The 60-65 H. P. Loveland.**

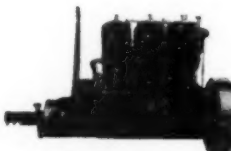
(Motor with reverse gear, \$1,600.)  
LOVELAND MFG. CO., Bridgeport, N. J. Four cylinders, four cycle, jump spark ignition, bore 8½ in., stroke 10 in., speed 350 r.p.m., diameter of flywheel 32 in., diameter of propeller 40 in., diameter of shaft 2½ in., equipped with Orswell ignition system, cylinders cast in pairs.

**The 60-65 H. P. Mercury.**

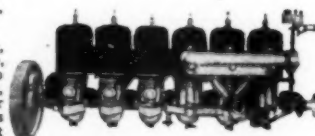
(Motor with complete electrical and boat equipment, including reverse gear and high tension magneto, \$1,250.)  
MERCURY MOTOR CO., Long Island City, New York. Four cylinders, four cycle, jump spark ignition, bore 6 in., stroke 6½ in., height from center of shaft 27¼ in., diameter of fly wheel 21½ in., weight 1035 pounds, valves on opposite sides of cylinders, reverse gear incorporated with engine frame.

**The 30-35 H. P. Palmer.**

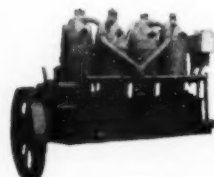
(Motor with reversible clutch, electrical and propeller equipment, \$1,300.)  
PALMER BROTHERS, Cos Cob, Conn. Three cylinders, four cycle, jump spark and make-and-break ignition, bore 7½ in., stroke 10 in., height from center of shaft to top of cylinders 35 in., diameter of fly wheel 28 in., normal speed 300 r.p.m., weight 3500 pounds, width of base 26 in., length of base 66 in.

**The 40-60 H. P. Pierce-Budd.**

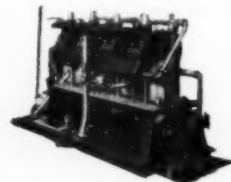
(Motor complete, \$1,072.)  
PIERCE-BUDD CO., Bay City, Mich. Six cylinders, two cycle, bore 4 in., stroke 4 in., speed 1500 to 1800 r.p.m., weight 390 pounds, aluminum base, exhaust and air pipes, cast iron cylinders with brass jackets. Extremely light weight model for speed boats.

**The 40 H. P. Perfection, Kerosene.**

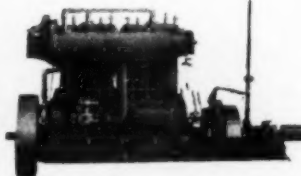
(Motor complete, \$1,140.)  
NICHOLS POWER CO., Stamford, Conn. Four cylinders, four cycle, make-and-break ignition, bore 7 in., stroke 6 in. May be had with reverse gear and complete equipment at additional cost of same, runs on kerosene oil or distillate.

**30-40 H. P. Murray & Tregurtha.**

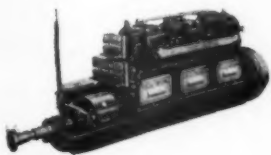
(Motor complete with electrical and boat equipments, \$1,402.50.)  
MURRAY & TREGURTHA CO., South Boston, Mass. Four cylinders, four cycle, make-and-break ignition, bore 6½ in., stroke 8 in., speed 400 r.p.m., weight 2500 pounds. The 20-30 h. p. four cylinder model sells for \$1,300.50, the 20-28 h. p. three cylinder model sells for \$1,207, the 16-24 h. p. four cylinder model for \$1,156 and the 12 h. p. four cylinder model for \$1,003.

**The 24-32 H. P. Racine.**

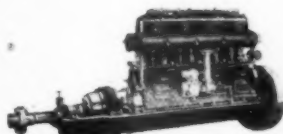
(Motor complete with electrical and propeller equipments, \$1,200; for salt water, \$1,250.)  
RACINE BOAT MFG. CO., Muskegon, Mich. Four cylinders, four cycle, jump spark ignition, speed 450 r.p.m., weight 1350 pounds. The 20 h. p. four cylinder, four cycle model turns at 500 r.p.m., weighs 800 pounds, and sells for \$1,000 with the equipment as stated above, and for salt water, \$1,050.



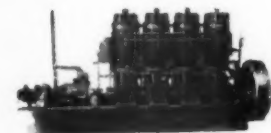




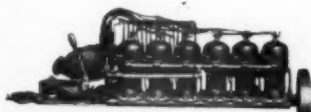
**The 60 H. P. Red Wing.**  
(Motor complete with electrical and propeller equipments, \$1,175.)  
**RED WING BOAT MFG. CO.**  
Red Wing, Minn. Six cylinder, two cycle, jump spark ignition, bore 5 in., stroke 5 in., weight 1040 pounds. A number of four cycle models also come within this class, viz: a 48-52 h. p. six cylinder of 6 in. bore and 6 1/2 in. stroke for \$1,650, a 48-52 h. p. four cylinder of 7 in. bore and 7 1/2 in. stroke for \$1,350, a 36-40 h. p. six cylinder model for \$1,330, a 32-40 h. p. four cylinder for \$1,140, and a 24-28 h. p. six cylinder model for \$1,235.



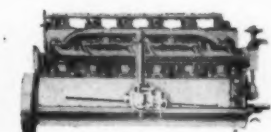
**The 45 H. P. Regal.**  
(Motor complete with reverse gear in extended base, \$1,800.)  
**REGAL GASOLINE ENGINE CO.**  
Coldwater, Mich. Four cylinders, four cycle, heavy duty, jump spark or make-and-break ignition, bore 7 1/2 in., stroke 9 in., weight 4200 pounds. The 28 h. p. four cylinder heavy duty model has a bore of 6 1/2 in. and stroke of 7 in., weighs 2500 pounds, and sells for \$1,200. Both of these models turn at from 100 to 400 r.p.m.



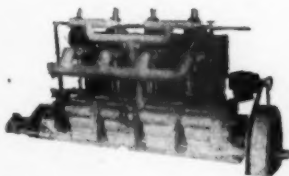
**The 46 H. P. Remington.**  
(Motor with complete equipment excepting shafting and fuel tanks, \$1,600.)  
**REMINGTON OIL ENGINE CO.**  
Stamford, Conn. Four cylinders, two cycle, bore 6 1/4 in., stroke 6 in., speed 500 r.p.m., weight 2000 pounds. Equipment includes automatic air starting device, mechanical lubricator and reverse gear. No electricity or gasoline used in any connection.



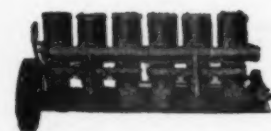
**The 48 H. P. Rochester.**  
(Motor with complete electrical equipment, \$1,350; with propeller equipment for salt water and reverse clutch, \$1,500.)  
**ROCHESTER GAS ENGINE CO.**  
Rochester, N. Y. Six cylinder, two cycle, jump spark ignition, bore 4 1/2 in., stroke 3 in., weight including clutch 1200 pounds, diameter of fly wheel 16 in., height from center of shaft 18 1/2 in. Similar in appearance to the four cylinder model shown in the accompanying illustration.



**The 100 H. P. Scripps.**  
(Motor with complete outfit, \$1,697.)  
**SCRIPPS MOTOR CO.**  
Detroit, Mich. Six cylinders, four cycle, bore 6 1/2 in., stroke 6 in., normal speed 1000 r.p.m., weight with aluminum crank case 1025 pounds. The 50-60 h. p. six cylinder model has a bore of 5 1/2 in., stroke 6 in., turns at 600 r.p.m., weighs 950 and 1240 with aluminum and iron crank cases, respectively, and sells for \$1,400.



**The 30-40 H. P. Strelinger.**  
(Engine complete, \$1,255; with electrical and boat equipments, \$1,295.)  
**STRELINGER MARINE ENGINE CO.**  
Detroit, Mich. Four cylinders, four cycle, make-and-break ignition, bore 6 in., stroke 6 in., speed 500 r.p.m., weight 1951 pounds, diameter of fly wheel 22 in., height to top of cylinders 28 in. Price with full equipment and either reverse gear or reversible propeller, \$1,405.

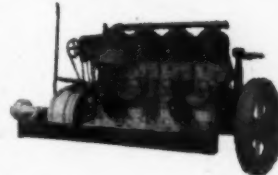


**The Syracuse Sixes.**  
("Little Six" complete, \$1,200; "Big Six" complete, \$1,850.)  
**SYRACUSE GAS ENGINE CO.**  
Syracuse, N. Y. The "Big Six" and the "Little Six" are identical in design. The former has a bore of 5 1/2 in., stroke of 5 1/2 in. and h. p. rating of 95 to 120. The latter has a bore and stroke of 4 in. and is rated at 55-65 h. p. Both models are equipped with the Syracuse patent exhaust manifold and aluminum is used in their construction of both where it is possible.

#### T. & M. 60 H. P. Light-weight.

(Motor with complete equipment for fresh water, \$1,200; for salt water, \$1,224.)

**TERMAAT & MONAHAN CO.**  
Oshkosh, Wis. Four cylinders, two cycle, jump spark ignition, bore 6 1/4 in., stroke 6 in., weight 1100 pounds. The 6 cylinder 54 h. p. model in racing trim weighs 850 pounds and sells for \$1,500, including reverse gear, Remy magneto and complete equipment. These models are both equipped with copper water jackets.



#### The 16-20 H. P. Standard.

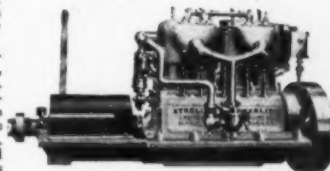
(Motor and equipment \$1,280.)  
**STANDARD MOTOR CONSTRUCTION CO.**  
Jersey City, N. J. The 16-20 h. p. four cylinder model is for heavy duty at slow speed and was designed primarily for the speedy day cruiser of from 30 to 40 ft. Bore 5 in., stroke 6 1/2 in., speed 350 r. p. m., weight 1600 lbs. The 18-24 h. p. three cylinder model of 6 in. bore and 8 in. stroke turns at 350 r. p. m., weight 1800 lbs., and sells for \$1,200. The 25-32 h. p. four cylinder model, also 6 by 8 in., weighs 2,000 lbs., and sells for \$1,600.



#### Three Sterling Models.

(35-55 H. P. aluminum base, \$1,200; iron base, \$1,125. 45-65 H. P. aluminum base, \$1,500; iron base, \$1,410. 40 H. P., heavy duty, \$1,612.50.)

**STERLING ENGINE CO.**  
Buffalo, N. Y. Two 6 cylinder models, viz: a 35-55 h. p. and a 45-65 h. p. model come within this class. Cylinders cast in pairs, four cycle, jump spark ignition; speed from 200 to 1,100 r. p. m.; normal 600-900 r. p. m. The 40 h. p. heavy duty model of four cylinders cast in pairs uses jump spark and in addition make-and-break ignition, and turns at 450 r. p. m.



#### The 30 H. P. Terry.

(Motor complete, \$1,750.)

**TERRY ENGINE CO.**  
New York City. Six cylinders, four cycle, jump spark ignition, bore 4 1/2 in., stroke 5 in., weight 1050 pounds, speed 600 r.p.m. The 25 h. p. four cylinder model of 6 1/2 in. bore and 7 1/2 in. stroke for \$1,500; the 25 h. p. two cylinder model of 7 1/2 in. bore and 9 in. stroke sells for \$1,375, and the 38 h. p. three cylinder model of 7 1/2 in. bore and 9 in. stroke sells for \$2,000.

(At time of going to press the Manufacturer's illustration of this motor was not available.)

#### The 30 H. P. Reeves-Graef.

(Motor complete, \$1,800.)

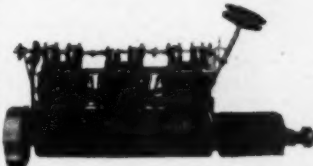
**TRENTON ENGINE CO.**  
Trenton, N. J. Four cylinders, four cycle, bore 6 1/2 in., stroke 8 1/2 in., speed 300-375 r.p.m., weight 3200 pounds. The 23-30 h. p., three cylinder model of the same bore and stroke sells for \$1,450 and the 15-20 h. p. two cylinder model also of the same bore and stroke sells for \$1,100. These models are all made with removable heads.



#### The Truscott 52 H. P.

(Motor complete with reversing wheel, \$1,400; with reverse gear, \$1,525.)

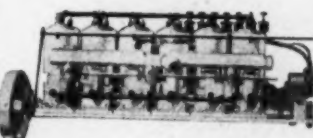
**TRUSCOTT BOAT MFG. CO.**  
St. Joseph, Mich. Six cylinders, four cycle, jump spark ignition, bore 5 1/2 in., stroke 6 in., speed 750 r.p.m., weight 1750 pounds. The 72 h. p. four cylinder model sells for \$1,760, the 42 h. p. six cylinder heavy duty model sells for \$1,725, the 35 h. p. four cylinder model for \$1,110, the 31 h. p. six cylinder model for \$1,225, and the 28 h. p. four cylinder heavy duty model for \$1,160.



#### The 60-90 H. P. Watertown.

(Price with standard equipment, \$1,260.50; with reverse gear and Bosch magneto, \$1,422.50.)

**WATERTOWN MOTOR CO.**  
Watertown, N. Y. Six cylinder, two cycle, jump spark ignition, bore 5 1/2 in., stroke 5 in., speed 800-1000 r.p.m., weight 825 pounds. The 40-50 h. p. six cylinder model has a bore of 5 in. and stroke of 5 in., runs normally at from 500-700 r. p. m., weighs 1075 pounds, and sells for \$1,050 with standard equipment.



## The National Motor Boat Carnival.

(Continued from page 3.)

the part of their helmsmen prevented any accidents. Vim and Peter Pan III both beat Edith II on actual time, but on the times being corrected it was found that Edith had won by nearly two minutes.

Of the nine starters only five finished, as Traver, Vita and Sand Burr were put out of the running by floating obstructions, and Lance had to stop as her engine got heated up on account of untired pump.

Caroline got over seven minutes late in the Class D race for cruising boats. Avis, the only other contestant in this class, beat Caroline by over a half hour corrected time.

When the races were about half over the crew of Petite reported that the lower stake was adrift. A launch was immediately sent out from Najme and the mark towed back to its place, but not until a good many of the boats had gone over a mile out of their way.

Eronel, the Bermuda Race winner, broke her crankshaft while racing against Spindrift in the E Class, and retired for good.

Kathmar, a Luders creation, ran away from Gracelda in the F Class, beating her by 46 minutes elapsed time, and 7 minutes corrected time.

Four boats started in the open boat class. Talequah, last year's winner, Bunk III being second and Petite third.

Friday proved to be the unlucky day, for out of twenty starters only twelve finished, the others all being put out of the running by the drift.

Tartar had a sail over in the B Class as X P D N C was withdrawn for no apparent reason except that she had been beaten by about a minute the day before.

Nameless got over in the lead in the Class C race, as Restless had some engine trouble at the start. Nameless kept up a good pace and was soon leading Restless by a good margin, but when it looked as if she would break the record for the course, she hit a log off Fort Washington Point. The log forced one of her quadruple screws up through the bottom, tearing a great hole through which the water poured. Charlie Aitken, who was at the wheel, immediately headed for shore. The launches Talequah and Bunk III, which were racing in the G Class, went to Nameless's assistance, thereby abandoning their own race. They stood by until Nameless was safely beached just south of the Point. She was almost totally submerged and all her electrical apparatus was ruined. The hull will probably be entirely rebuilt as a result of the accident.

Edith II again won the Class A race with Peter Pan III, Vanish and Vim right behind her. Haida-Papoose, Traver and It were put out of the running by logs, and Lance had pump trouble.

The crowd was greatly disappointed by the streak of hard luck that Traver seemed to have, for everyone wanted to see this boat, which, when called Emerson, broke all records at Peoria, show her paces. At times she ran at better than 30 miles per hour, and her engine seemed to work perfectly, but it seemed as if she had a peculiar attraction for logs, for she hardly made a round without striking one or more.

Avis had an easy victory in the D Class, and Spindrift had a sail over in Class E.

Kathmar again won the F Class race, and Imp was the only finisher in the G Class, as Petite was put out by a log, and Talequah and Bunk III went to Nameless's assistance.

The last day was a disappointment, as practically everybody had been eliminated by the condition of the river. Classes A and G were the only ones in which two or more boats started. Tartar, Restless, Avis, Spindrift and Kathmar all had sail overs in their classes.

Class A had eight starters, but only two, Vanish and Edith II finished, the other six all being withdrawn.

Peter Pan, who had been making very good

time, struck a log and broke her strut, and was towed in. Vita, Vim and Haida-Papoose were all badly damaged. It limped in with a bent wheel, and Lance had pump trouble again. Truly, a disgraceful showing, not because of any fault in the boats themselves, but because of the races being run off over a course that for years has been in a bad condition.

There are any number of places near New York where the races can be run without having a course resembling a Steeplechase. If the regatta committee persist in running the races over this course, it will be necessary to teach racing boats to hurdle.

The winners of the seven prizes are as follows: National Trophy, Tartar, International Championship, Restless; Interstate Trophy, Edith II; Motor Yacht Trophy, Avis; Cruiser Prize, Kathmar; Special Open Boat Prize, Bunk III.

### Summary—National Motor Boat Carnival.

#### FIRST DAY

SPEED BOATS. START 9:35. COURSE 115 MILES. FOUGH-KEEPSIE AND RETURN.

Boat and Owner	Finish Elapsed Corrected
Edith II, A. E. Smith.....	3:32:21 5:48:21 3:35:18
Peter Pan III, J. Simpson.....	3:57:43 5:22:43 3:42:30
Vanish, W. T. Reed.....	3:22:23 5:47:23 3:58:02
Teaser, H. Z. Pratt.....	4:48:45 7:13:45 5:15:39
Sand Burr, A. K. & C. D. ....	4:16:09 6:41:09 6:35:03
White.....	Did not finish
Rapier, S. Schieffelin.....	Did not finish
It, Chas. Mallory.....	Did not finish
Ilus, D. E. Cronin.....	Did not finish
Red Raven, P. A. Saitta.....	Did not finish
Gunfire II, W. J. Barnard.....	Did not finish

CLASS D. CRUISING BOATS. START 9:40. COURSE 60 MILES. PEERSKILL AND RETURN.

Boat and Owner	Finish Elapsed Corrected
Caroline, M. F. Dennis.....	4:00:06 6:20:06 3:55:44
Spindrift, C. A. Butler.....	3:48:47 6:08:47 4:02:38
Eronel, Sam'l Cochrane.....	3:27:09 5:47:09 4:17:10
Avis, F. C. Havens.....	2:12:51 4:32:51 4:19:25
Wanderbush, E. J. Steiner.....	2:47:33 5:07:33 4:24:31
Edmee, R. J. Schaefer.....	2:12:56 4:32:56 4:29:58
Marie, L. Neumann.....	3:18:35 5:38:35 4:31:48
Wyandance, R. J. Stafford.....	2:36:25 4:56:25 4:56:25

CLASS F. CRUISING BOATS. START 9:40. COURSE 60 MILES. PEERSKILL AND RETURN.

Boat and Owner	Finish Elapsed Corrected
Elmo, II, F. D. Giles, Jr.....	4:08:11 6:28:11 4:26:19
Gracelda, D. B. Brinsmade.....	4:26:01 6:46:01 4:48:12
Dell, J. H. Cassidy.....	3:05:50 5:25:50 4:59:34
Quadrant II, A. P. Lundin.....	3:11:28 5:31:28 5:06:24
Kathmar, R. A. Fowler.....	2:48:55 5:08:55 5:08:55
Hie On, O. D. Thees.....	3:50:04 6:10:04 5:11:57
Nutmeg, W. A. Strong.....	4:20:20 6:40:20 5:19:28

#### SECOND DAY

CLASS B. START 2:05. COURSE 30 NAUTICAL MILES.

Boat and Owner	Finish Elapsed Corrected
Tartar, R. E. Slavin.....	3:06:12 1:01:12 1:01:12
X P D N C, J. Siegel.....	3:32:24 1:27:24 1:02:10
Rapier.....	Did not finish

CLASS C. START 2:10. COURSE 30 NAUTICAL MILES.

Boat and Owner	Finish Elapsed Corrected
Restless, T. F. Chesebrough.....	3:29:35 1:19:35 1:19:35
Nameless, Hecksher & Melville.....	3:29:48 1:19:48 1:19:48

CLASS A. START 2:15. COURSE 30 NAUTICAL MILES.

Boat and Owner	Finish Elapsed Corrected
Edith II, A. E. Smith.....	3:49:02 1:34:02 1:22:01
Peter Pan III, J. Simpson.....	3:47:10 1:32:10 1:28:34
Vim, G. F. Baker, Jr.....	3:45:07 1:30:07 1:30:07
Haida-Papoose, M. C. Fleishman.....	3:56:34 1:41:34 1:32:20
It, Chas. Mallory.....	4:00:10 1:45:10 1:36:44
Traver, A. Traver.....	Did not finish
Vita, J. S. Blackton.....	Did not finish
Sand Burr, A. K. & C. D. ....	Did not finish
White.....	Did not finish
Lance, Heinrich Brothers.....	Did not finish

CLASS D. START 2:20. COURSE 20 NAUTICAL MILES.

Boat and Owner	Finish Elapsed Corrected
Avis, F. C. Havens.....	4:04:53 1:44:53 1:44:53
Caroline, M. F. Dennis.....	5:22:47 3:02:47 2:18:49

CLASS E. START 2:25. COURSE 20 NAUTICAL MILES.

Boat and Owner	Finish Elapsed Corrected
Spindrift, C. R. Butler.....	5:07:54 2:42:54 2:39:48
Eronel, S. Cochrane.....	Did not finish

CLASS F. START 2:30. COURSE 20 NAUTICAL MILES.

Boat and Owner	Finish Elapsed Corrected
Kathmar, R. A. Fowler.....	4:43:32 2:13:32 2:13:32
Gracelda, D. B. Brinsmade.....	5:29:25 2:59:25 2:20:09

CLASS G. START 2:35. COURSE 20 NAUTICAL MILES.

Boat and Owner	Finish Elapsed Corrected
Talequah, M. H. Niles.....	5:37:27 3:02:27 2:11:30
Bunk III, C. Firth.....	5:36:56 3:01:56 2:24:32
Petite, H. W. Browne.....	5:10:34 2:35:34 2:35:34
Imp, A. Haas.....	6:15:57 3:40:57 2:58:29

#### THIRD DAY

CLASS B. START 2:05. COURSE 30 NAUTICAL MILES.

Boat and Owner	Finish Elapsed Corrected
Tartar, R. E. Slavin.....	3:13:54 1:08:54 1:08:54

CLASS C. START 2:10. COURSE 30 NAUTICAL MILES.

Boat and Owner	Finish Elapsed Corrected
Restless, A. F. Chesebrough.....	4:28:47 2:18:47 2:18:47
Nameless, Hecksher & Melville.....	Did not finish

CLASS A. START 2:15. COURSE 30 NAUTICAL MILES.

Boat and Owner	Finish Elapsed Corrected
Edith II, A. E. Smith.....	3:48:39 1:33:39 1:21:32
Peter Pan III, J. Simpson.....	3:45:12 1:30:12 1:26:44
Vanish, W. T. Reed.....	3:47:55 1:32:55 1:27:05
Vim, Geo. F. Baker, Jr.....	3:47:02 1:32:02 1:32:02
Haida-Papoose, M. C. Fleishman.....	Did not finish
Lance, Heinrich Brothers.....	Did not finish
Traver, A. Traver.....	Did not finish
It, Chas. Mallory.....	Did not finish

CLASS D. START 2:20. COURSE 20 NAUTICAL MILES.

Boat and Owner	Finish Elapsed Corrected
Avis, F. C. Havens.....	4:01:42 1:41:42 1:41:42
Caroline, M. F. Dennis.....	4:59:07 2:39:07 1:55:09

CLASS E. START 2:25. COURSE 20 NAUTICAL MILES.

Boat and Owner	Finish Elapsed Corrected
Spindrift, C. R. Butler.....	4:58:04 2:33:04 2:33:04

CLASS F. START 2:30. COURSE 20 NAUTICAL MILES.

Boat and Owner	Finish Elapsed Corrected
Kathmar, R. A. Fowler.....	4:37:08 2:07:07 2:07:07
Gracelda, D. B. Brinsmade.....	5:18:26 2:48:26 2:09:10

CLASS F. START 2:35. COURSE 20 NAUTICAL MILES.

Boat and Owner	Finish Elapsed Corrected
Imp, A. Haas.....	5:55:17 3:20:17 3:20:17
Petite, H. W. Browne.....	Did not finish
Bunk III, C. Firth.....	Did not finish
Talequah, M. H. Niles.....	Did not finish

#### FOURTH DAY

CLASS B. START 2:05. COURSE 30 NAUTICAL MILES.

Boat and Owner	Finish Elapsed Corrected
Tartar, R. E. Slavin.....	3:06:34 1:01:34 1:01:34

CLASS C. START 2:10. COURSE 30 NAUTICAL MILES.

Boat and Owner	Finish Elapsed Corrected
Restless, T. F. Chesebrough.....	3:49:27 1:39:27 1:39:27

CLASS A. START 2:15. COURSE 30 NAUTICAL MILES.

Boat and Owner	Finish Elapsed Corrected
Vanish, W. T. Reed.....	3:44:22 1:29:22 1:23:32
Edith II, A. E. Smith.....	3:57:43 1:42:43 1:29:36

CLASS D. START 2:20. COURSE 20 NAUTICAL MILES.

Boat and Owner	Finish Elapsed Corrected
Avis, F. C. Havens.....	4:05:31 1:45:31 1:45:31

CLASS E. START 2:25. COURSE 20 NAUTICAL MILES.

Boat and Owner	Finish Elapsed Corrected
Spindrift, C. R. Butler.....	4:13:48 2:26:13 2:26:13

CLASS F. START 2:30. COURSE 20 NAUTICAL MILES.

Boat and Owner	Finish Elapsed Corrected
Kathmar, R. A. Fowler.....	4:33:15 2:03:15 2:03:15

CLASS G. START 2:35. COURSE 20 NAUTICAL MILES.

Boat and Owner	Finish Elapsed Corrected
Bunk III, C. Firth.....	5:24:28 2:49:28 2:49:28
Imp, A. Haas.....	5:34:11 2:59:11 2:54:09

## Mr. Fauber's Comments on Pioneer.

To the Editor of Motor Boating, Sir:—An article in your September number states that the Duke of Westminster's hydroplane boat Pioneer when under speed rises on her V-shaped planes and decreases her stability, and that she also tends to lean outward when turning. As both of these statements are wrong, I trust you will publish this rectification.

To begin with, all patent records and public data show that the Fauber is the original V-type hydroplane; there may be two steps or as many as desired.

When I took up the development of the hydroplane, the only examples of hydroplane construction known was the flat bottomed type proposed by the Rev. C. M. Ramus nearly forty years ago (in 1873) and a number of later patents relating to the submerged blade type; the latter, for obvious reasons, have never been reduced to practice.

One of the principal objects of the V-shaped planes is to get stability; consequently, if the boat when under speed was unstable, this object would be defeated. As a matter of fact, the V-Plane has greater stability than flat planes or the ordinary displacement boat.

One other advantage of the V-type is that the bottom and underneath portion can be so shaped as to reduce the pounding action on rough water.

The V-type when properly designed has a number of other features very essential to a practical hydroplane.

Fauber hydroplanes do not, like the ordinary type of boat, heel outward when turning, but, on the contrary, incline inwardly, and this is due to the fact that the stern and rear half of the boat swings sidewise—the boat pivoting forward of the center of its length. Owing to the side movement, the outer half of the V-planes get a much better lifting action while turning than the inner half of the planes, the result being that the boat heels inwardly like a bicycle when making a turn.

This is just as it should be and the Fauber type of hydroplane can turn at higher speed than any other hydroplane or displacement boat. It is further obvious to any student of the question that the rudder would exert a torque tending to incline the boat inwardly.

Previous to the construction of Pioneer, the S. E. Saunders Co., Ltd., England, Licensees, and myself here in France, have built a number of eight metre boats of identically the same model; these boats have proved to be better sea boats than the ordinary displacement boat and superior in every respect.

Columbine (see page 6) is an eight metre Saunders-Fauber hydroplane fitted with a Wolsley 60 h. p. motor; this boat has repeatedly done the Admiralty Course of a nautical mile at a speed of 32 to 32½ knots, and in various racing events showed an average of 20 to 30 knots—being practically as fast as other makes of hydroplanes of double the horsepower.

(Continued on page 82.)



# New Things for Motor Boatmen.

New Attachments and Accessories That Are Offered to the Man With a Boat.  
The Month's Production of Devices Designed as Aids to Motor Boating.

[Under this heading will appear each month descriptions and, whenever possible, illustrations of the various devices designed to add to the pleasure and comfort of motor boating which have been brought out since the previous issue. It should be kept in mind that the department in any one issue is, as it were, only one month's installment of the many useful things on the market, and that it will be well to consult the previous issues of MOTOR BOATING which will form, together, a very complete illustrated directory of the things the motor boatman needs.—In writing the makers of the articles shown, if our readers will mention MOTOR BOATING they will receive special attention.]



Fig. 1.—G. B. C. Automatic Relief Valve.

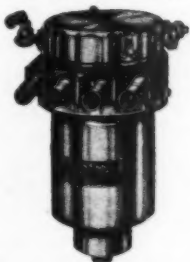


Fig. 2.—B. & S. Igniter.



Fig. 3.—Weaver Muffler Cut-Out Valve.



Fig. 4.—National Tank Gauge.



Fig. 5.—Rex Spark Gap Terminal.

**G. B. C. Automatic Relief Valve (Fig. 1).**—Geo. B. Carpenter & Co., Chicago. This valve is designed to act as a substitute for the ordinary hand relief valve placed on the underwater exhaust outfit of a two-cycle motor. In many cases a valve of some kind is required to relieve the back pressure when starting the motor, and the G. B. C. valve performs this duty automatically, closing when normal speed is reached with no attention on the part of the operator. The valve must be placed in a vertical position, and it can replace the hand valve by tapping the hole to  $\frac{3}{8}$ -in. iron pipe thread. The price is \$3.

**B. & S. Igniter (Fig. 2).**—Briggs & Stratton Co., Milwaukee, Wis. A new type of igniter has just been placed upon the market by this company, which embodies a number of new features. The spark coil, distributor, and timer are in one case, as with the other models, but the principal feature is the contact maker which is an improved form of the cam and lever. The cam is secured to a plunger which is drawn down out of contact with the contact arm by the magnetism produced in the iron core of the transformer coil, thus eliminating any chance of different durations of contact at different motor speeds. At high speeds this magnetic action does not have an opportunity to work, so that it is effective only at low speeds when the duration of contact would otherwise waste the current. The igniter is made for 2, 3 or 4 cylinder motors for \$30, and for 6 cylinder motors for \$35, complete with switch and terminals for secondary wiring.

**Weaver Muffler Cut-Out Valve (Fig. 3).**—H. G. Weaver, Atlanta, Ga. This device furnishes a means for relieving the exhaust gases from the motor and acts as a cut-out valve, a whistle and a safety alarm valve. It is applied at a point between the motor and muffler and the principle of the whistle construction is the same as that of a steam whistle. When the valve leaves its seat, as shown in the cut, a small amount of gas is forced into the whistle, causing it to sound, but when the valve reaches a position shown by the dotted line the gases are set entirely free and the muffler is cut out. By this method a slight pressure upon the valve blows the whistle and a greater pressure operates the cut-out. When undue pressure arises in the muffler for any cause whatever the valve is opened and the whistle sounds an alarm.

**National Gasoline Tank Gauges (Fig. 4).**—National Motor Supply Co., Cleveland, O. These gauges are made in three types, known as the "National Special," selling for \$2; the "Kant-Stik," shown herewith, selling for \$2.50; and the "E-Z-2-C," selling for \$2.50. The National Special is similar to the standard gauge but is constructed to fit tanks having close partitions. The dial is only about  $\frac{3}{4}$  of an inch high so it will fit under any seat. This dial reads from the side while the Kant-Stik reads from the top. The gauge head is made of polished brass, the top ring of which may be unscrewed if desired to insert a new glass. The E-Z-2-C gauge may be attached to the front seat or bulkhead and is always in sight without lifting a cushion. The dial can be turned around so the hand will point downward if desired and it can be placed in any space with  $\frac{3}{4}$  inch clearance.

**Rex Spark Gap Terminal (Fig. 5).**—The Motor Supply Co., Havana, Ill. As the illustration shows, this terminal is clamped around the cable and may be very easily attached. The spark gap acts as an auxiliary condenser on the line and it is claimed gives an increased spark between the plug points. Every spark is shown in plain view as it enters the cylinder, thereby enabling any difficulty with the ignition system to be easily detected. The price of the article is 25c.

**Flexible Valve Grinder (Fig. 6).**—Flexible Valve Remover Co., Providence, R. I. This device is 12 inches in length and very light in weight, consisting of a rod with a swivel knob at the top and a handle projecting from the side so arranged that it can be moved up and down in a groove and fixed at any point on the vertical rod by tightening the handle. A spring is furnished which may be placed underneath the valve when using the grinder and which automatically lifts the valve. The adjustable handle with which the tool is provided allows the instrument to be used in places otherwise inaccessible and it may be used to very good advantage as a screw-driver for removing large screws or those that have become rusted. The price of the article is \$1.75.

**Freer Gauge (Fig. 7).**—Freer Gauge Co., Akron, O. This gauge is made in either magnetic or non-magnetic type, the magnetic gauge being illustrated herewith. The dial may be placed in any desired position, either under the seat or on the bulkhead and may be easily read. The magnetic type is especially adapted for use on high pressure tanks, and the gauge of either type will register when there is but a half inch of gasoline in the tank. Tipping of the tank will not affect the operation of the gauge. The cylinder containing the gauge, a sectional view of which is shown, is made of 24-gauge brass, and the price, including the necessary copper tubing for equalizing the air pressure, is \$2.25.

**Cutler-Hammer Battery Switch (Fig. 8).**—Cutler-Hammer Manufacturing Co., Milwaukee, Wis. Although this switch is very small it has a large current-carrying capacity, being rated at 10 amperes at 80 volts. It operates with a quick "make and break" mechanism and is of the push-and-pull type. The insulating material is both fire and waterproof and the push bar is heavily constructed. The position of this bar indicates whether the switch is open or closed. The extreme depth of the switch is  $1\frac{3}{16}$  inch and it may be mounted in any convenient position. It is finished either in polished or brush brass, polished nickel or gun metal, and lists, without the flush plate, for 70c.

**Dixie Horn (Fig. 9).**—B. M. Asch, 1779 Broadway, New York City. The feature of this horn is its quick operation, as a touch with the hand or elbow against the push plunger will cause it to sound a loud penetrating note. It is a vibrating horn, not motor driven, and to this fact is due its quick action. The horn casing is made of polished brass, so insulated from the current carrying parts that it may be mounted on metal framework without danger of short circuits. The tone points are unusually large and the magnets are insulated and impregnated with a special moisture-resisting compound. A weather-proof push plunger is provided and all exposed parts are bronzed and treated with a rust-proofing process. The price is \$15 complete.

**Lane's Ratchet Wrench (Fig. 10).**—J. C. McCarty & Co., 21 Murray St., New York. This device is a combination of a ratchet, screw-driver and wrench, its operation being entirely automatic. It may be changed from right to left by simply throwing over the lever shown in the illustration, and the ratchet itself works so easily and lightly that a screw or nut may be turned until it is very loose. The wrench sockets are of case hardened steel and will fit both square and hexagonal nuts. The bits for the screw-driver are of oil tempered tool steel. The set illustrated consists of a handle and ratchet, two screw-driver bits,  $\frac{3}{8}$  and  $\frac{1}{2}$  inch, and six wrench sockets from  $\frac{5}{16}$  inch to  $\frac{5}{8}$  inch. The total weight is one pound and the device sells for \$36 per dozen.

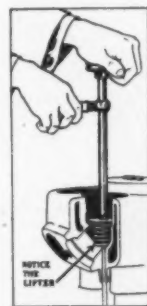


Fig. 6.—Flexible Valve Grinder.



Fig. 7.—Freer Gauge.



Fig. 8.—Cutler-Hammer Switch.



Fig. 9.—Dixie Horn.

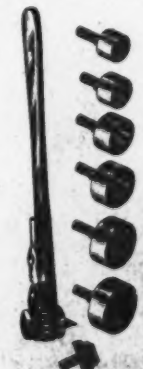


Fig. 10.—Lane's Ratchet Wrench.



Fig. 11.—Combination Suit.

**Combination Suit (Fig. 11).**—Automobile Apparel Co., 14 West 22d St., New York City. This garment is designed to keep the clothes clean when giving the motor a thorough overhauling and is also a practical garment to keep stowed in the locker in case of an emergency. It may be put on and taken off very easily and a person is entirely covered when wearing it. There are no coat tails or trimmings to interfere, and being cut full size, it is very comfortable. The garment is provided with slits at the pockets to allow the wearer to reach through to the clothes worn underneath. It is made of strong washable material in four grades ranging in price from \$3.75 to \$7.50 per suit.



Fig. 12.—Becco Spark Plug.

**Becco Spark Plug (Fig. 12).**—The Beck Co., Rockville Centre, N. Y. A removable shell and firing pin is placed in this new spark plug, so that the carbon can be easily cleaned from the sparking points. This shell collects all the dirt, carbon and soot from the gases in the cylinder so that when the shell is removed and a new one inserted the plug is perfectly clean. The firing pin can be just as easily replaced. It is made curved so that the gap may be changed by bending it and it is threaded to screw on to the electrode. The electrode is provided with a flat surface on one side so that the firing pin can be locked on it. The shell is made of steel and plated with nickel, and the firing pin of nickel alloy. The price of the complete plug is \$1; extra shells cost 25c. per dozen, and firing pins 15c. per dozen.

**Combination Klaxon (Fig. 13).**—The Lovell McConnell Mfg. Co., Newark, N. J. This new instrument unites the Klaxon with a reed horn of Klaxon workmanship, obviating the necessity of carrying two warning signals upon the boat, one for long and the other for short range use. The reed horn, by reason of its combination with the Klaxon, possesses many advantages with its deep vibrant note doubly strengthened and intensified. The diaphragm of the Klaxon acts as a vibrating sounding board for the reed signal and the peculiar shape of the projector directs its force and strengthens it. The button for operating the Klaxon and the bulb for operating the reed horn are placed side by side so that both may be operated with equal facility.



Fig. 13.—Combination Klaxon.

**Czar Spark Plug (Fig. 14).**—Syracuse Specialty Co., Syracuse, N. Y. The feature of this plug lies in a priming passage through which the plug can be washed and blown out while in the cylinder. The priming cup instead of holding a large amount of gasoline is made to fit the end of any ordinary can so that the gasoline can be injected through the hollow electrode shown in the illustration into the top of the chamber, thereby serving the double service of cleaning the plug and priming the engine. The insulation consists of a heavy tapered mica sleeve into which the electrode tube is driven by pressure, preventing it from leaking or absorbing oil. The plug is made in half inch, seven-eighths-eighteen and metric threads and sells for \$1.50.



Fig. 14.—Czar Spark Plug.

## The Elbridge Featherweight.

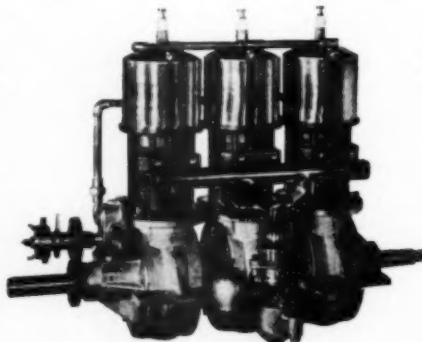
The Elbridge Engine Company, of Rochester, N. Y., have recently been giving their attention to the designing of motors of extremely light weight, which are adapted for either marine or aeronautical purposes. The fact that the firing chamber of the Elbridge Motor is a separate casting allows aluminum or other suitable metals to be employed in the construction of the cylinder heads, crank cases, manifolds, etc., without affecting the vital parts of the motor.

The type of engine here illustrated, which is known as type F, weighs but 178 pounds in the design producing 61.6 h. p. at 1600 r.p.m., and is made with spun brass water jackets. The motors of this type have a bore of 4 3/8 inches and a stroke of 4 1/2 inches, and are made in two, three, four and six cylinder designs, ranging in horsepower from 20-30 to 60-90. These motors develop, according to standard rating, more than 15 horsepower per cylinder at 1600 r.p.m., although the rating given by the manufacturers is 10 h. p. per cylinder at 1000 r.p.m.

Type F motor is hand made throughout. The crank shafts have hollow throws and the connecting rods are balanced so there can be no variation in weight. The cylinders are machined outside and in and the piston rings are fitted by hand to insure satisfactory compression. Special attention is given to the crank cases which are just large enough to permit the passage of the throw of the crank shaft and connecting rod, and no larger. This arrangement makes the crank case extremely light and the only packing needed is thin ma-

nilla paper between it and the base.

The bearings are made of high speed babbitt metal, of extra length, and with intermediate bearings of unusual size between the cylinders. Bronze rotary pumps are used on all except the single cylinder type in the smallest power, and the pumps are made in an especially light design. The standard equipment includes the Schebler carbureter, of aluminum if desired,



The Elbridge Featherweight.

using the model L for speed engines and model D for ordinary work, Atwater-Kent Unisarker, and Bosch magneto or standard dash coil ignition.

This type of motor weighs 64 pounds in single cylinder design, 106 pounds in two cylinder, 150 pounds in three cylinder, 200 pounds in four cylinder, and 250 pounds in six cylinder designs. The aero motors of the same type weigh from six to ten per cent less

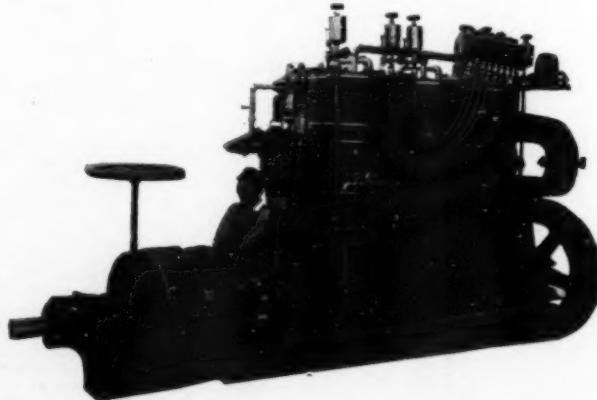
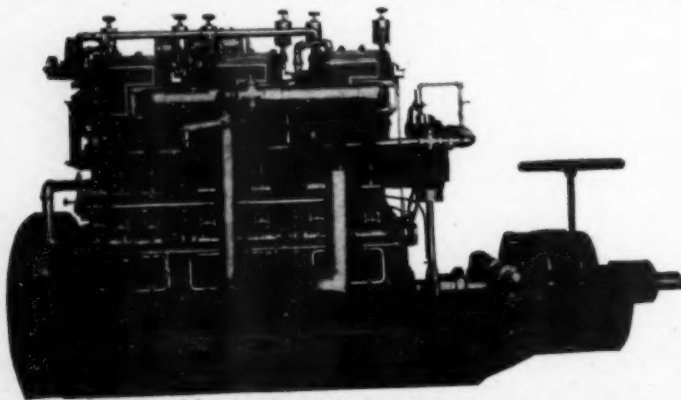
## A New 60 H.P. Globe.

The Pennsylvania Iron Works Co., of Eddystone, Pa., builders of the Globe marine engines, have recently placed on the market a new size, namely: The Type "T," three cylinder, 60 h. p. air-starting engine. This is in many respects similar to their Type "T," four cylinder, 80 h. p. motor, which has been used in a number of large vessels.

This engine, like all other "Globes," is of the four cycle, heavy duty low speed type and is intended for use in large commercial and cruising boats. The engine starts automatically by compressed air, which is furnished by a large water-jacketed pressure pump mounted on the aft cylinder. This pump is constantly in operation and supplies a pressure of 100 pounds for starting the engine and blowing the whistle.

The 60 h. p. engine has a bore of 10 inches and a stroke of 10 inches and is designed to turn a 44 inch, three blade propeller at 325 r.p.m. Its weight complete with fly wheel and reverse gear, as shown in the cut, is 5,700 pounds, which is somewhat lighter than their regular Type "H" four cylinder, 50 h. p. engine.

The ignition is of the latest improved make-and-break type, with low tension Holtzer-Cabot magneto attachment. The lubricating devices consist of an eight feed multiple oiler for the bearings and six one-pint lubricators fitted with check valves for the cylinders. Cooling water is supplied by an extra large gear-driven, rotary pump mounted on forward part of engine, just to the rear of the flywheel, to which it is geared.



Port and starboard views of the new 60-horse-power Globe motor. Note the size of the reversing gear.



# Yard and Shop



Putting the finishing touches on twin cruisers at the plant of the Outing Boat Company, Ashland, Wisconsin.

**Flash Manufacturing Company, Incorporated.** The Flash Manufacturing Company, of Zanesville, O., manufacturers of the Flash Decarbonizer, have recently incorporated with a capital of \$15,000. It is stated that the company expect shortly to introduce another product of great value to motor boatmen.

**Marine Motors to Save Trees.** The Lackawanna Mfg. Co., of Newburg, N. Y., have recently delivered to the Department of Parks, New York City, a special 12 h.p. motor which is to be used for spraying trees as a protection from many of the tree pests that have been destroying them. The machine, ready for use, requires two or three horses to draw it and weighs over 4 tons. It operates at 250 pounds pressure, sufficient to throw a single stream 75 feet high, or three streams simultaneously, if desired.

**Sales Agreement Terminates.** Upon October 1st the sales agreement which has existed between the United Manufacturers and the Connecticut Telephone & Electric Company and the Connecticut Shock Absorber Company, of Meriden, Conn., was terminated. All products of these companies will hereafter be handled from the main offices at Meriden.

**A Novel Battleship Fleet.** 26 miniature war vessels, from nine to 15 feet in length, constructed entirely of steel and fully equipped, have been attracting considerable attention in Cincinnati. These vessels were built in Germany where motive power was furnished by an electric motor in each boat. Since being sent to this country one of the vessels has been equipped with a 3 h.p. Ferro motor which has proved so satisfactory that the owner of the fleet is equipping the rest with similar motors.

**The Stanley Company, of Lawrence, Mass.,** motor manufacturers, have purchased a site for a factory at Beverly, Mass., and have made plans for the erection of a fireproof factory building.

**A New Spark Plug Cover.** Palmer Brothers, of Cos Cob, Conn., makers of the Palmer engine, are equipping the new models of their jump spark motors with a spark plug cover of a new design for protecting the plugs from dampness and consequent liability to short circuits. These covers also furnish protection to the operator who is working near the motor when it is running.

**A 500 Mile Voyage.** A 39 ft. cruiser belonging to Edward A. Snowman, of Springfield, Mass., recently made a very successful 500-mile journey from Penobscot, Maine, to Springfield, Mass., in just 9 days. The boat was built in Penobscot by George E. Whitehouse and is equipped with a 16 h.p., 2-cylinder Springfield motor of the two-cycle type, and Mr. Snowman states that he came through without a skip of the motor. The boat, which

is christened Hopalong, has a beam of 11 ft. and is of oak construction throughout with cypress and mahogany trimmings. To be prepared for an emergency the boat was stocked with 10 pounds of hard-tack and an ample supply of fresh water.

**Havoline Oil Company in New Location.** The Havoline Oil Co., of New York City, have removed their offices from 80 Broad Street and are now located at 133 William Street.

**A Delaware River Racer Wrecked.** Zip II, a craft capable of 30 miles an hour, which recently won the championship of the Delaware River, was totally demolished a few

hours, 25 minutes and 58 seconds. Upon this trip the run from Greenville, Miss., to Vicksburg, a distance of 134½ miles, was made in 4 hours, 27 minutes and 6 seconds, at a rate of slightly better than 30 miles per hour. The 8-cylinder Fox motor used at the time has been sold, so only the hull will be on exhibition.

**The Gray Motor Company, of Detroit,** through their recent affiliation with the United States Motor Company have expanded so that they expect in a short time to triple their present output. A new model of their engine has been completed, known as model "T" which, under various conditions, is said to have shown 20% more power than their former engine of like cylinder dimensions.

**The Contents Page** of this issue illustrates two very interesting boats, the upper one being Porpoise, a 27-footer, and one of the latest designs from the boards of William H. Hand, Jr., of New Bedford, Mass. The lower photograph shows Erd, a 30 foot craft with a 4 foot beam, built by the Erd Motor Company, of Saginaw, Mich. She is equipped with a 60 h. p. Erd motor and is capable of 30 miles per hour.

**William J. A. Bailey, of William J. A. Bailey & Co.,** export sales managers, of 32 Broadway, New York City, expects to leave very soon for a trip in which he will visit the leading commercial centers of the world. Permanent sales offices are located in different countries and Mr. Bailey will be glad to hear from manufacturers seeking foreign trade.

**A 5,000 Mile Cruise.** Ralph M. Pearson, of Chicago, recently returned from a cruise from Chicago, by way of the Illinois River and Michigan canal, Mississippi River, Gulf Coast, Florida and East Coast, Hudson River, Erie Canal, and through the Great Lakes to Chicago again, which is one of the longest water trips that can be taken without leaving the shores of the United States. Mr. Pearson's cruiser was equipped with a four cycle, heavy duty Holliday motor, and the cost for repairs for the entire trip was 22c., spent for a new wrist pin when the engineer neglected to oil the cam shaft.

**The Marine Supplies Association of America, of 149 Broadway, New York City,** held a meeting on October 25th, at which it was decided to change the date of the annual meeting from November to the date of the New York Motor Boat Show. It was thought that much more good could be accomplished by holding it during show week, inasmuch as the New York show is always a feature of particular interest to members.

**The Boston Show.** Manager Chester I. Campbell, of the Boston Motor Boat Show, is sending out literature regarding the coming exhibition and from the number of new exhibitors who have already applied for space it is

## Shows for 1911.

**Boston, January 28th to February 4th, 1911.** National Motor Boat and Engine Show, to be held in Mechanics Building. This is the only exhibit in Boston sanctioned by the New England Engine and Boat Association. Manager, Chester I. Campbell, 5 Park Square, Boston.

**New York, February 21st to March 4th, 1911.** Annual Show of National Association of Engine & Boat Manufacturers, to be held at Madison Square Garden. Manager, Capt. J. A. H. Dressel, 138 West 42d Street, New York City.

weeks ago at the mouth of Woodberry Creek near Woodberry, N. J., when it crashed into a partly submerged canal barge. Thomas Hutchinson, the owner, was aboard with five friends and all of them were quite severely injured. The boat was running at about 22 miles an hour when it crashed into the canal barge which had been evidently deserted after sinking in a narrow part of the creek where the banks are not over 30 feet apart. It is said that there was no light on the barge and no warning was given of the danger until the Zip was about 5 feet from the sunken craft. All of the occupants of the boat were hurled into the water and some were thrown against the side of the barge with such force as to make their injuries quite serious.

**Br'er Fox Will Be At Boston.** Chester I. Campbell, manager of the Boston Motor Boat Show, has made arrangements with Messrs. M. B. & A. G. Dean, owners of Br'er Fox to send her hull from Newport, Ky., to Boston to be exhibited at the forthcoming motor boat show. This boat is the one which made the trip a year ago last April from Cincinnati to New Orleans, a distance of 1,554 miles, in a total elapsed running time of 53

thought the show will be the largest yet held. Diagrams for space and other details may be secured from the manager, 5 Park Square, Boston.

**An Opening for American Representation in Montreal.** E. Drolet, Park Laval, Quebec, Que., writes that he would be very pleased to hear from motor or specialty manufacturers upon the American side who would be interested in securing representation in the territory comprising Montreal, Quebec, and vicinity.

**The Monarch Valve Company,** of Brooklyn, N. Y., manufacturers of the Monarch carburetor, state that they have been advised that their product does not infringe any existing patent and that they have greatly improved their 1911 models. An injunction which was brought against them some months ago to compel them to cease the manufacture of carburetors, was denied.

**A Motor Police Boat for the Chicago River.** The first police boat to operate on the Chicago River has just been equipped with a Holliday engine.

**Gray Motor Company's New Plant.** The new plant into which the Gray Motor Company expect to move in a very short time measures 1,000 feet in length by 150 feet in width, and is said to be one of the largest plants of its kind in the world. The office building of the company measures 60 by 80 feet and the testing room, which is 40 by 300 feet, gives the company more than three times the space that they now have. In the new quarters the output of the company will be from 1,000 to 1,200 motors per month, in both marine and stationary types.

**Death of Charles Garland.** The drowning of Charles Garland, proprietor of the White House, at High Bridge and the Harlem River, New York City, a short time ago, has caused sorrow among motor boatmen upon the Harlem River. Mr. Garland was vice-commander of the U. S. Volunteer Life Saving Corps and was very popular among his many friends. His death was caused by a collision between his launch and a N. Y., N. H. & H. car ferry.

**Petition Filed Against Thrall Motor Company.** A petition in bankruptcy has been filed by creditors against the Thrall Motor Company, of Detroit. The company is alleged to have committed an act of bankruptcy in making an assignment of stock and machinery upon September 12. The Detroit Trust Company has been appointed receiver.

## Through the Whirlpool Rapids.

Captain Klaus P. Larsen, on September 18th, successfully piloted an 18-foot craft from the Maid of the Mist landing upon the Canadian side of the Niagara River, to a point in the calmer waters below the rapids upon the American side. The event had been heralded as a race, but every other contestant who had entered dropped out for various reasons, and Capt. Larsen accomplished the feat alone. He used a boat of the life boat model, with a beam of 5 feet, 2 inches, which had a draft of 24 inches, and which was equipped with a

two cylinder 8 h. p. Ferro motor with jump spark ignition. The boat was constructed by the Cleveland Auto Boat Manufacturing Company, and was completely decked over with the exception of a round hole in the middle about 2½ feet in diameter. The Captain stood in this and a canvas was drawn tightly around his waist, covering the cockpit.

The trip through the rapids was successful, but the water had so drenched the ignition system after passing the whirlpool that the motor stopped temporarily and Capt. Larsen walked ashore when the boat drifted near the rocks. The race was to have been held for a prize of \$1,000 and a cup, but the withdrawal of the entrants caused the race to be called off and Capt. Larsen made the trip merely to prove that it could be done.

## A Simple Substitute for the Sextant.

(Continued from page 24.)

are brass strips also 1/16 inch thick which serve as guides for the long plate and keep its axis perpendicular to the sighting slit. The sighting slit is about 1/16 inch wide and may have its sides beveled. It is well to have that portion of the cross plate which is toward the eye painted with lusterless black. The back cross plate, Fig. 3, goes on the cross plate back of the long sliding plate and serves to assemble the whole; it is secured to the front cross plate by means of 3/32 inch round-headed screws having nuts on their opposite ends. Or the back plate may be made of a little heavier stock and be directly tapped for the reception of these screws, thus dispensing with the nuts.

## Buccaneer, a 55-Foot Cruiser.

This attractive semi-type raised deck cruiser, a cut of which appears upon page 12, has proven to be a very remarkable sea boat in Lake Michigan, her home waters. She is owned by Mr. Charles T. Welch, of Milwaukee, and an opportunity has been given this year to freely test her out. She is of the deep body type, 55 feet long, 11 feet 6 inches beam, with cast lead on the keel, and draws 4 ft. 3 in. She was built by William Burger, of Manitowoc, Wis., from the designs of Whittelsey & Whittelsey, of New York.

The principal underbody features are the same in this boat as in Edamena, a description of which was published in the October number of MOTOR BOATING, and the action of the boat has been substantially the same. She is powered with a 40 h. p. Sterling motor, which gives her a speed of 11 miles per hour at 360 r. p. m. Her long distance speed is estimated at 10¼ miles per hour, and as the hull is especially designed for heavy weather conditions, there is very little drop in the speed under varying conditions of the seaway.

She is laid out with owner's stateroom forward, which is trimmed in white finish with mahogany. The engine room is abaft the own-

er's stateroom, slightly forward of midship section; the galley and toilet are abaft the engine room, and the main saloon is aft.

The main saloon is finished in full, solid African mahogany, and is very large for a boat of this size. On the deck there is a very attractive bridge, slightly forward of the midship section, under which is located part of the machinery. Owing to the depth of the body of this boat, it was possible to obtain a headroom of 5 ft. 10 in. under this bridge. The headroom throughout the rest of the boat is about 6 ft. 6 in. Buccaneer is very heavily constructed and has proven herself to be a most comfortable cruiser, and is safe in all weathers.

## A Marine Producer Gas Plant.

The Marine Producer Gas Power Company, of 2 Rector St., New York City, who have been making gas producer plants for a number of years, have recently placed upon the market a suction producer designed to be used in connection with marine motors of 25 to 200 horsepower, or even less, although they are not recommended for power plants of the smaller sizes. This producer uses either anthracite pea coal, charcoal, or coke, with equal power results and no change in the apparatus.

The operation of the producer is similar to that of an ordinary coal stove, and after the fire is well under way, the fuel is fed through an air sealed hopper on top of the producer until completely filled, all openings then being closed. The fire is kept in a smouldering condition and the producer then manufactures gas only as the engine requires it, each down stroke of the motor taking enough air through the producer for its proper operation. This producer is said to eliminate any danger for the reason that it operates from a partial vacuum by suction and since there is no pressure from the inside no gas can escape into the boat; in case of a leak, air would enter the producer to fill the vacuum.

After the gas has passed into the cylinders of the engine the operation is identical with that of an ordinary gasoline motor after the mixture has passed through the carburetor. The only change required is the substitution of a mixer for the carburetor and a slight change in the piston. Any motor with proper areas of inlet and outlet will operate upon producer gas and it is said that the motor working under these conditions will last longer, due to the fact that the gas itself, while it has very nearly the same power value, burns more slowly.

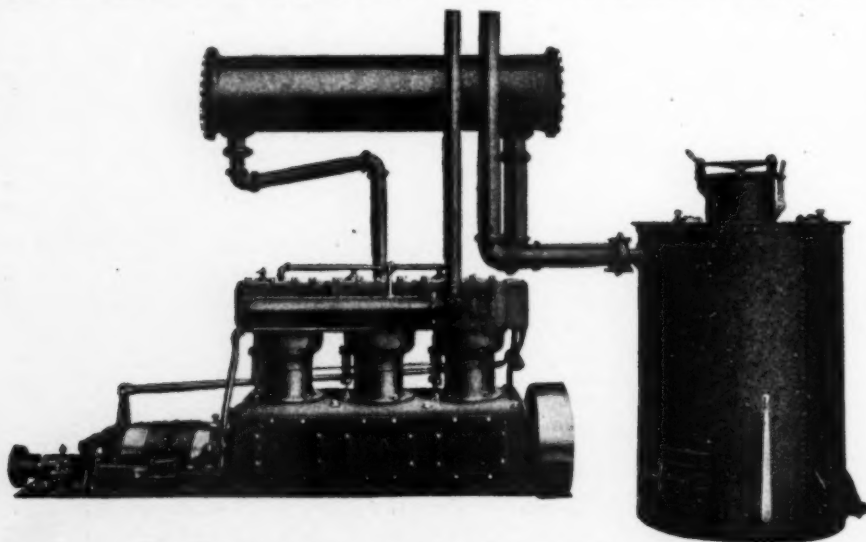
The gas is ignited while under compression as easily as is gas from gasoline, but the manufacturers state that the jump spark system is not as efficient as the make-and-break. The power derived is approximately 18% less than that obtained from gasoline in an engine of a given power.

The producer plant which is shown in the accompanying illustration is composed of the producer which is similar to a coal stove except that it is heavily insulated on the inside and connections are made from the outside air through a pipe to the lower part of the producer, and from the top of the producer one pipe is led to the outside air, a branch from which goes to a small gas cleaning tank. From this cleaner the gas is led through a pipe to the inlet valves of the motor. A small hand-operated fan is provided attached to the air inlet at the bottom for blowing the fire before starting.

The cleaner is a small cylindrical tank which may be placed in any convenient position in the engine room. A water pump attached to the engine pumps water into the top of this tank and a pipe leading from the bottom allows the water to flow back overboard.

The operation of this producer plant is said to be very economical when compared with gasoline or steam. According to tests which have been made, 8 pounds of coal will operate a given power of motor as long as one gallon of gasoline, while a steam engine in usual practice would require about 20 pounds of coal.

In the accompanying illustration, the vertical cylinder is the producer or generator and the hopper into which the fuel is fed may be seen at the top. The cylindrical tank over the motor is the cleaning tank through which the gas passes after it leaves the generator and before it enters the motor at the intake valves.



A Marine Producer Gas Plant for motors of the smaller type.



# MOTOR BOATING

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Telephone  
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# COX & STEVENS

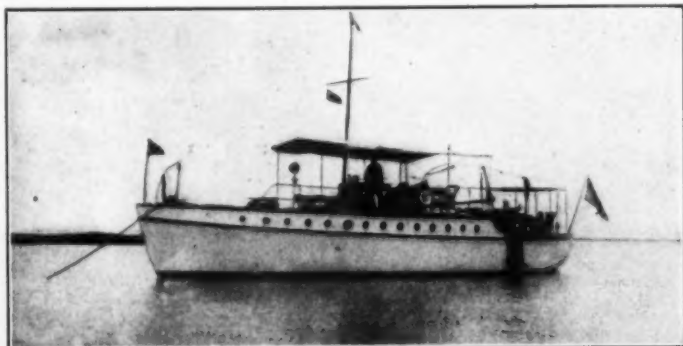
## NAVAL ARCHITECTS

AND

## YACHT BROKERS

15 William Street  
New York City

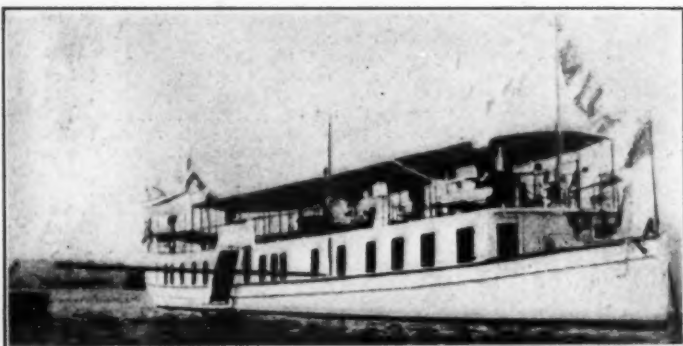
We offer for sale or charter all the available Steam Yachts, Auxiliaries, Motor Boats, House Boats, and Sailing Yachts that are in the market here and abroad. If you will write us stating your requirements we will mail you full information.



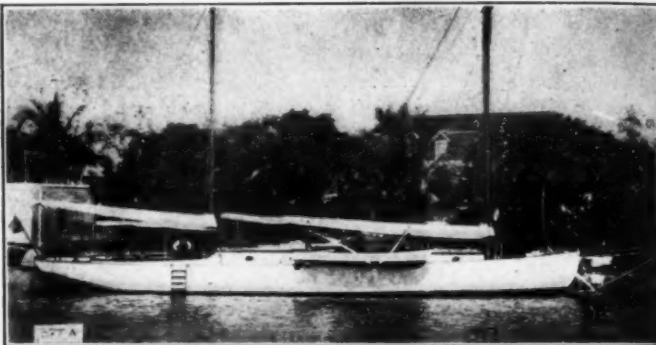
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*Please mention MOTOR BOATING.*



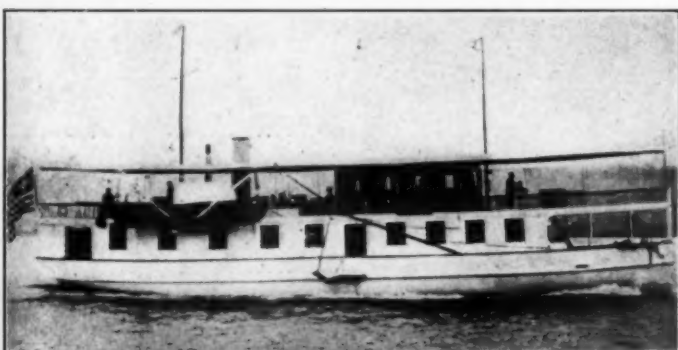
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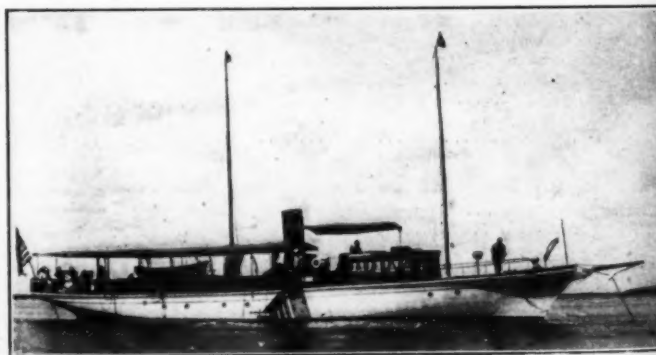
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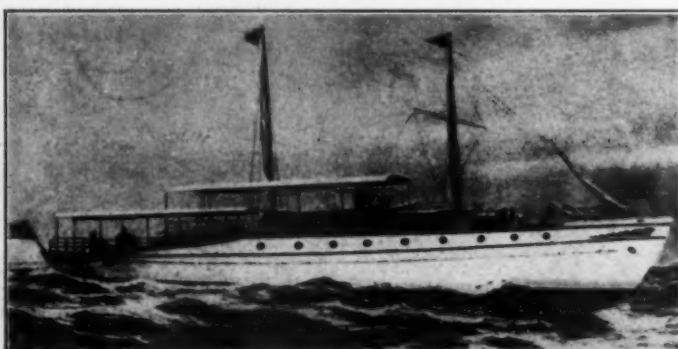
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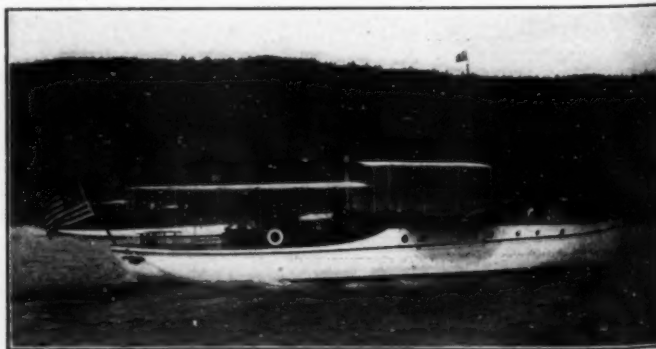
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*Please mention MOTOR BOATING.*



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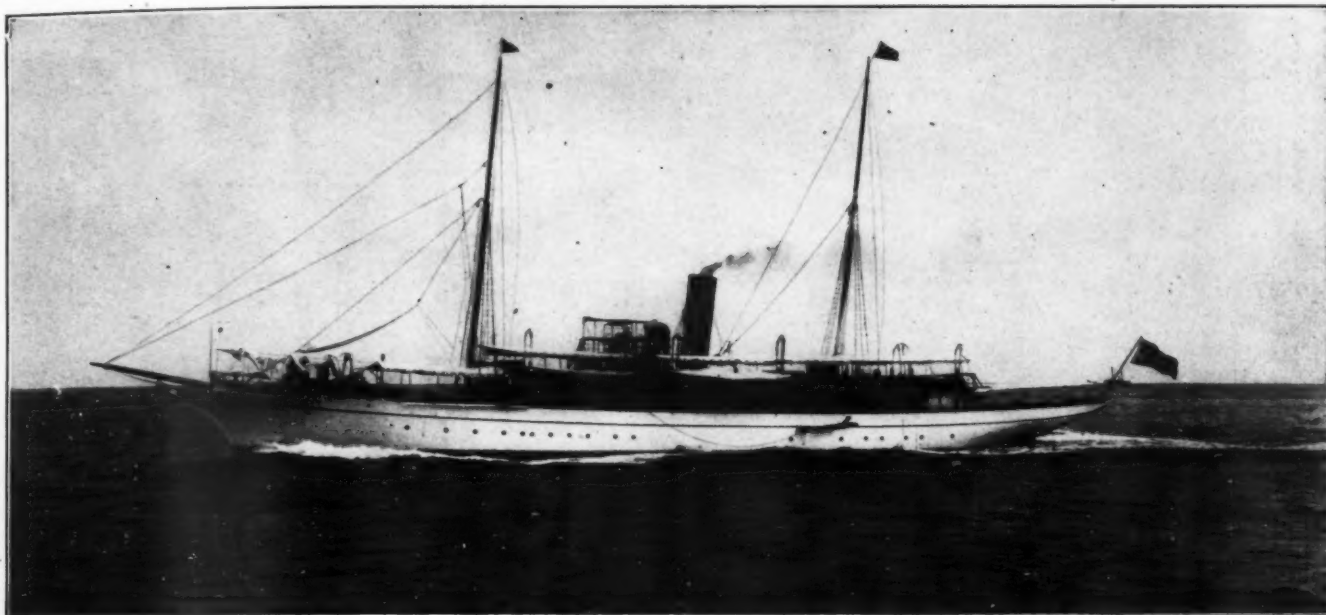
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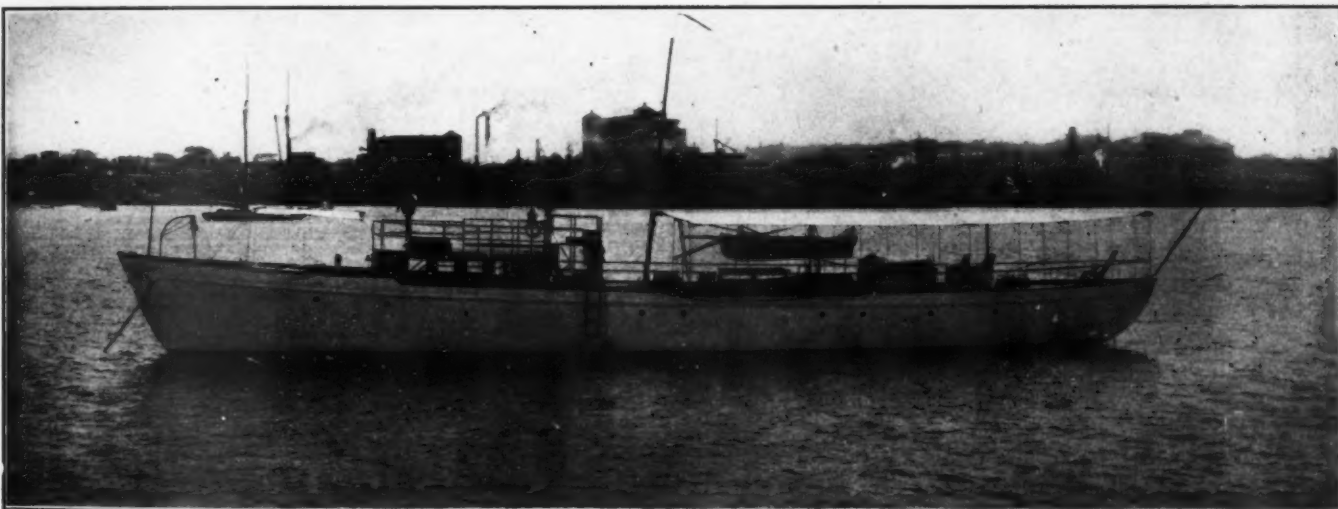
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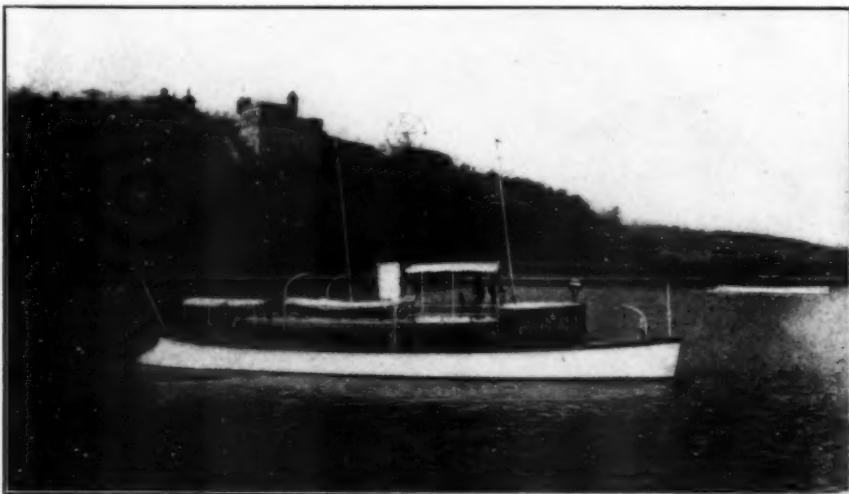
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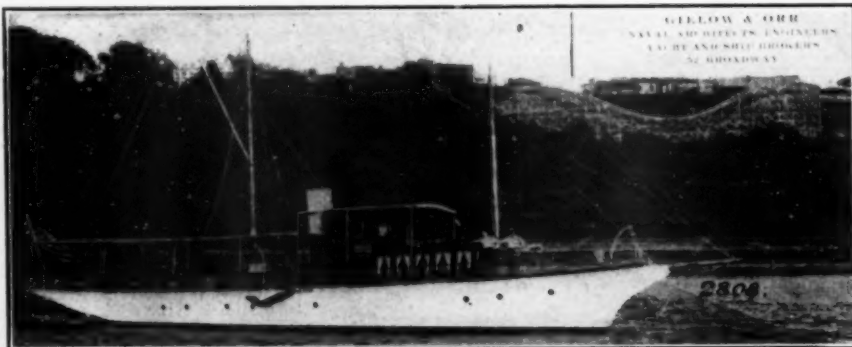
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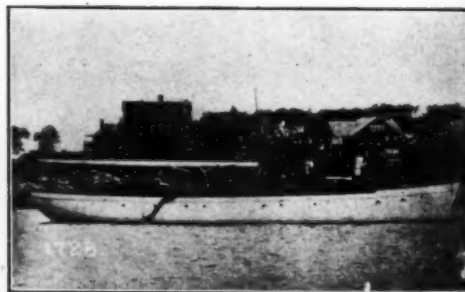
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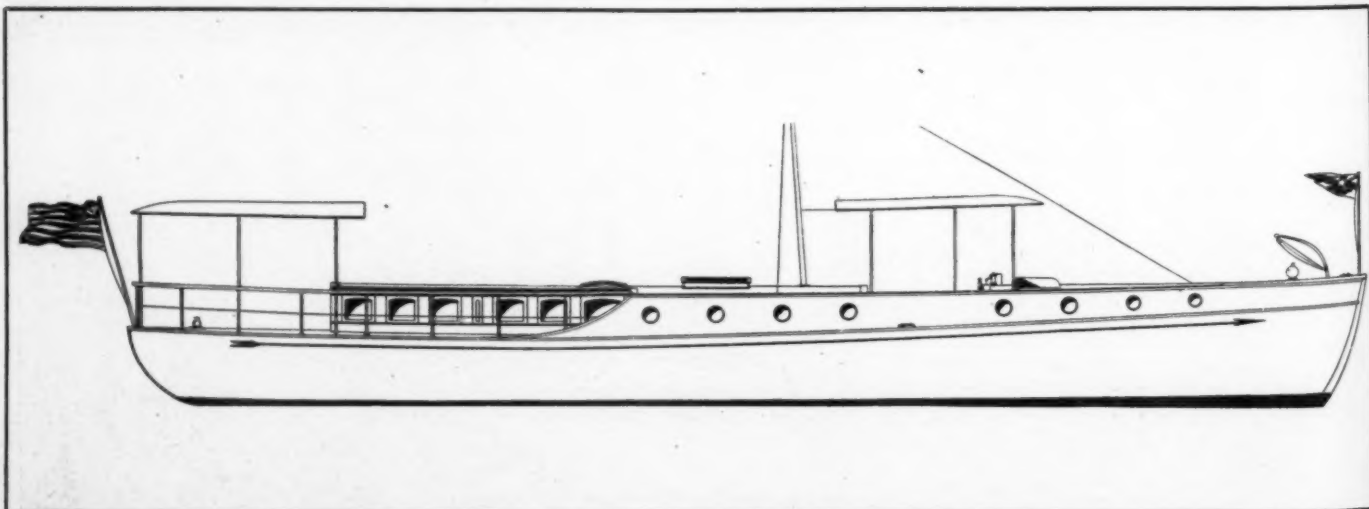


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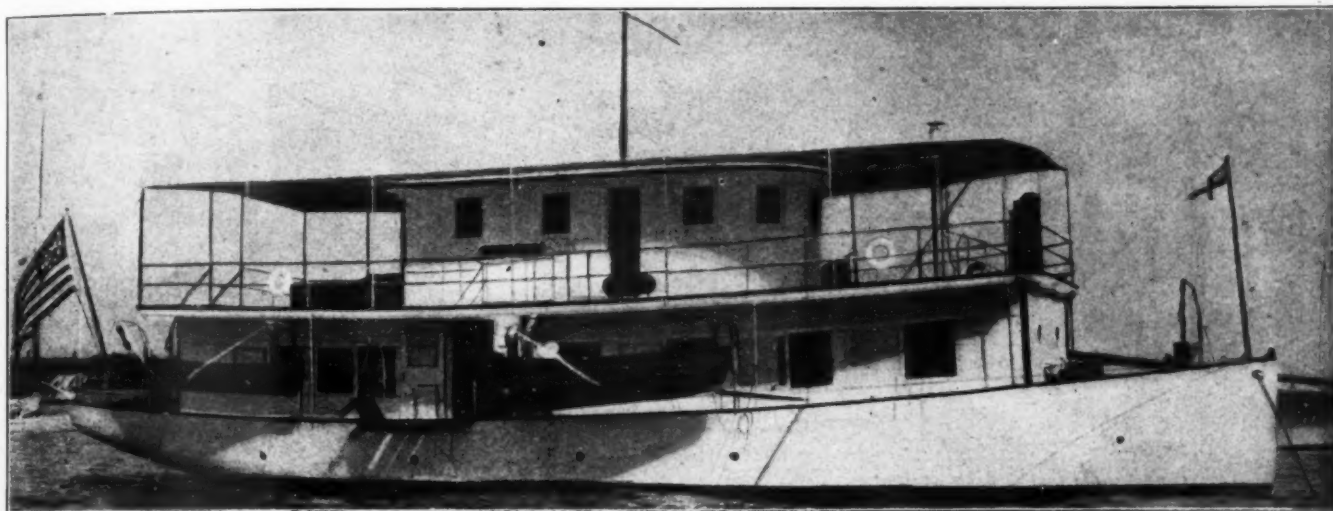
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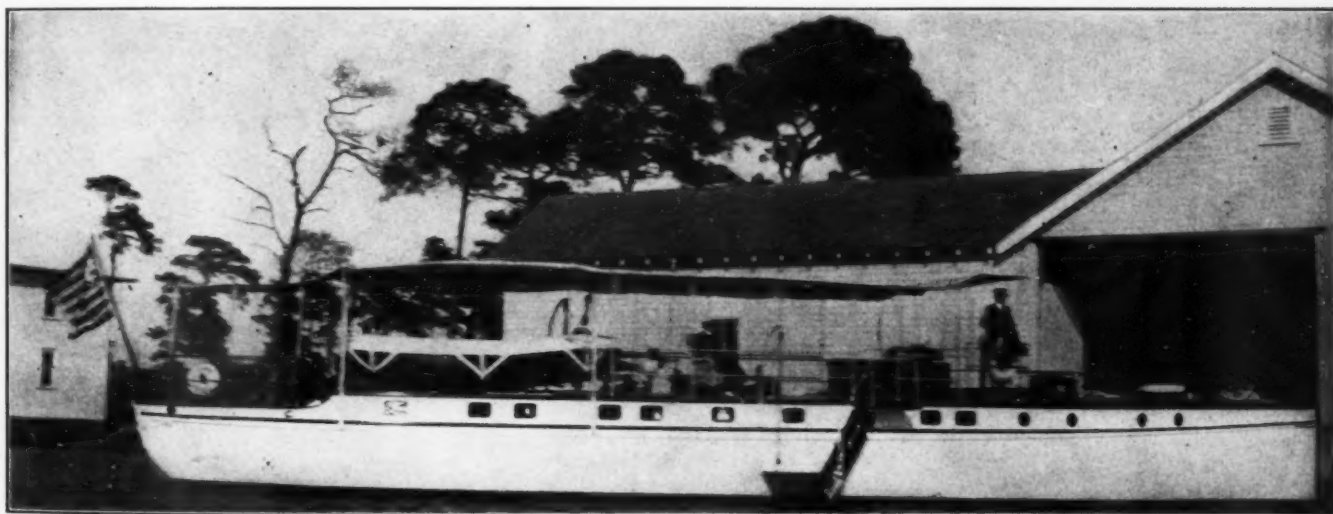
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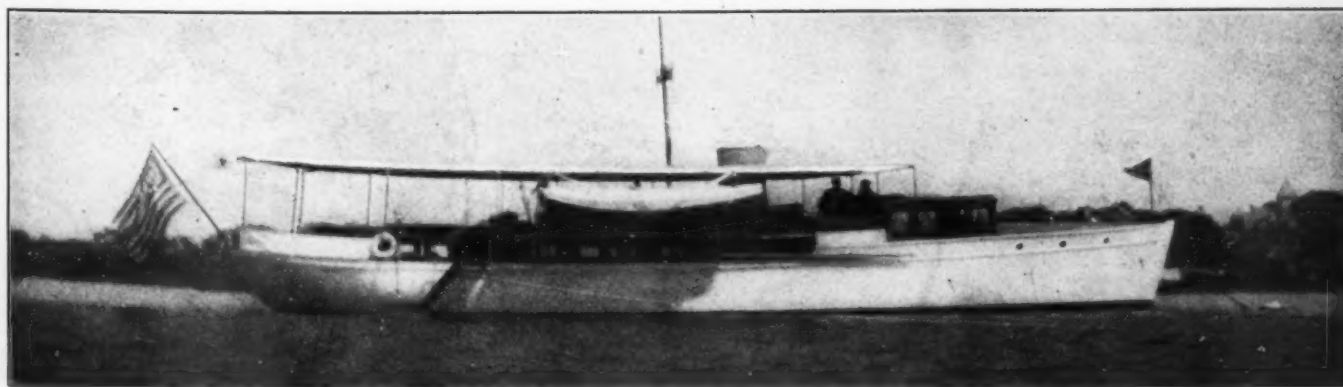
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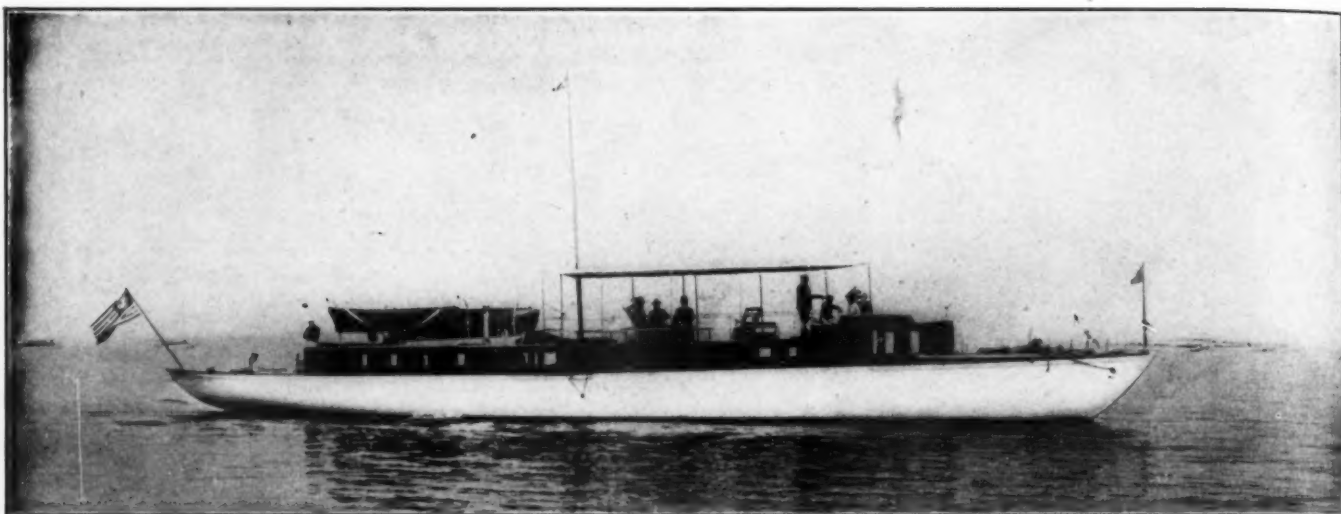
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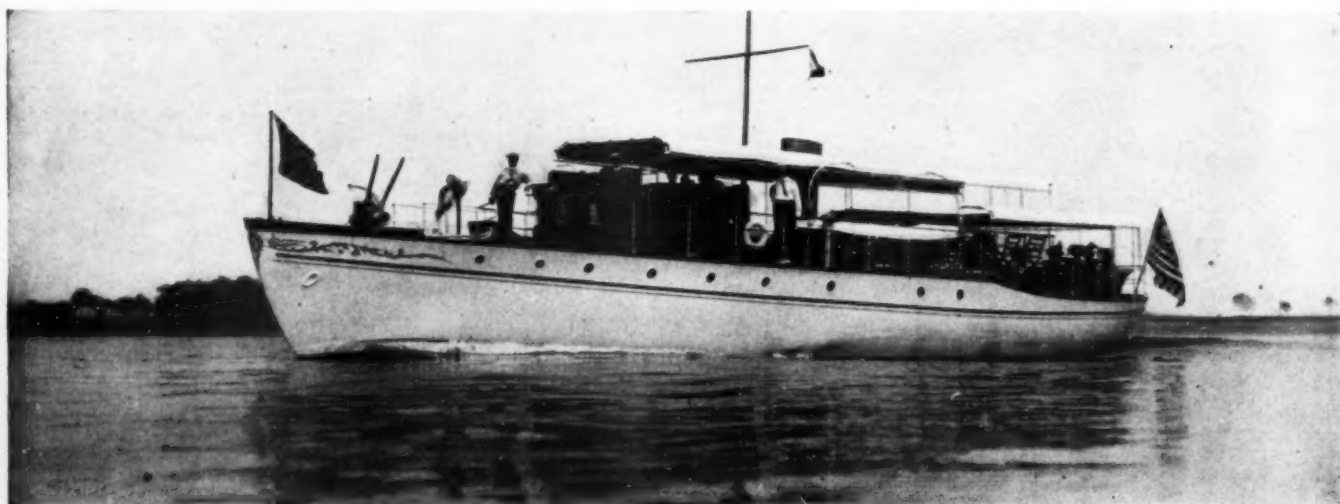
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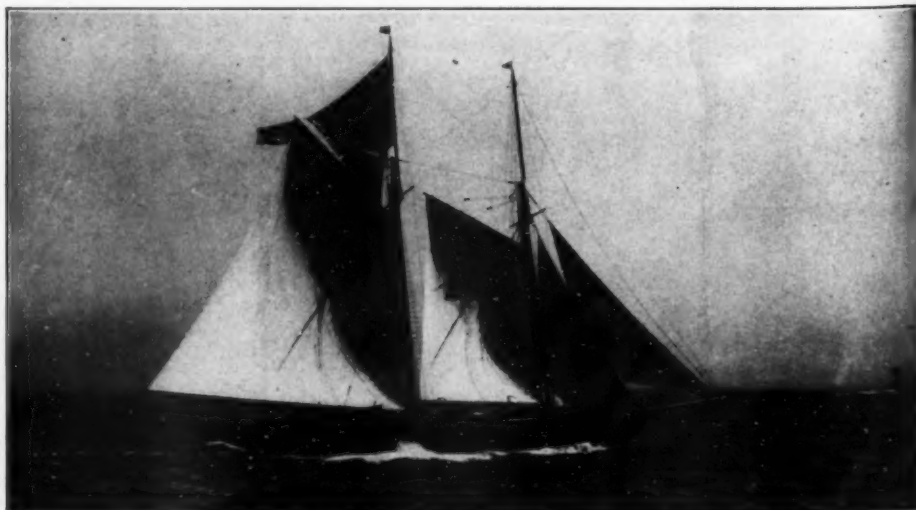
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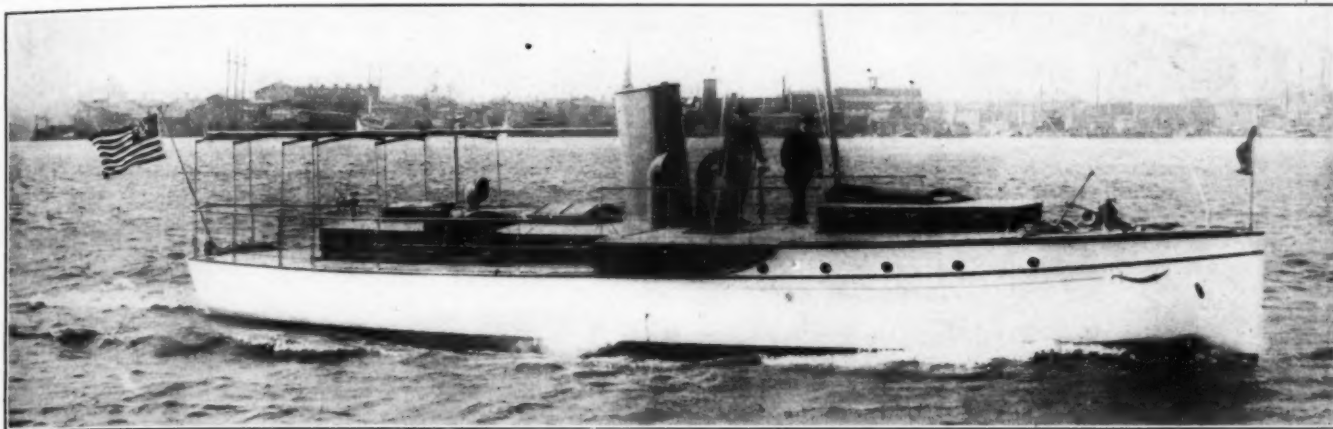
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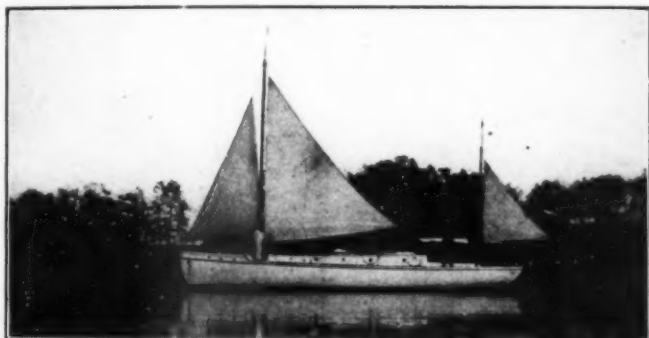
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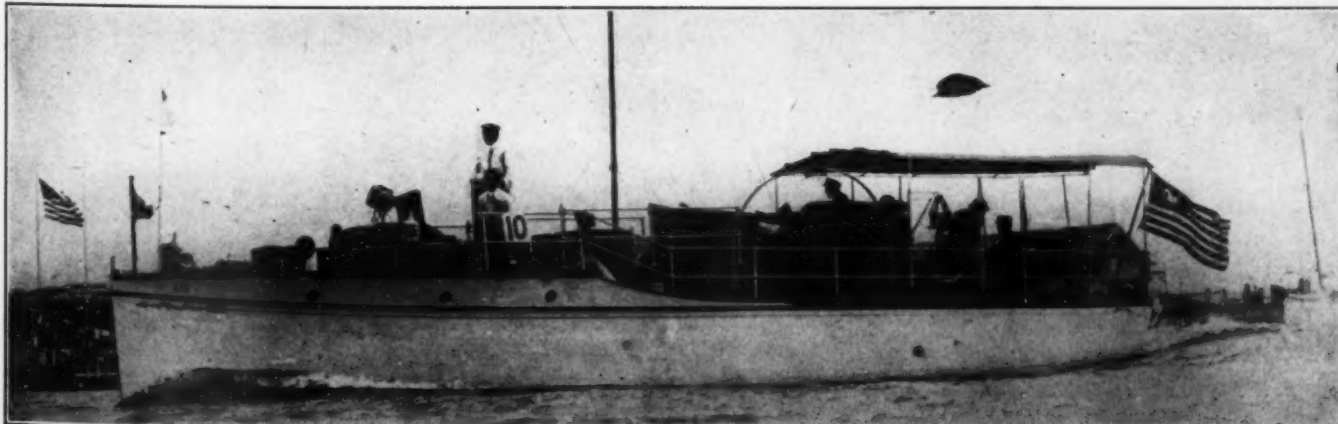
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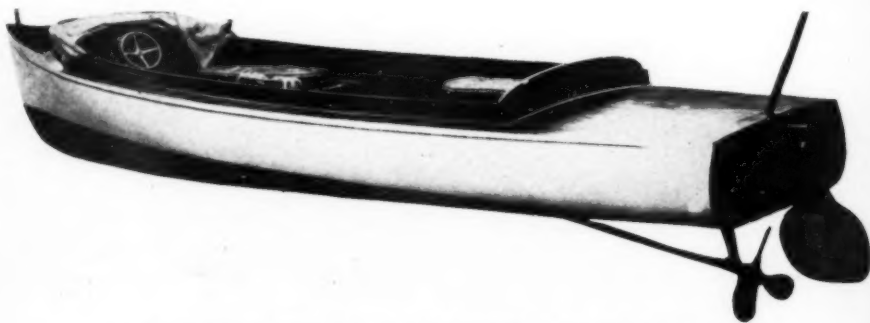
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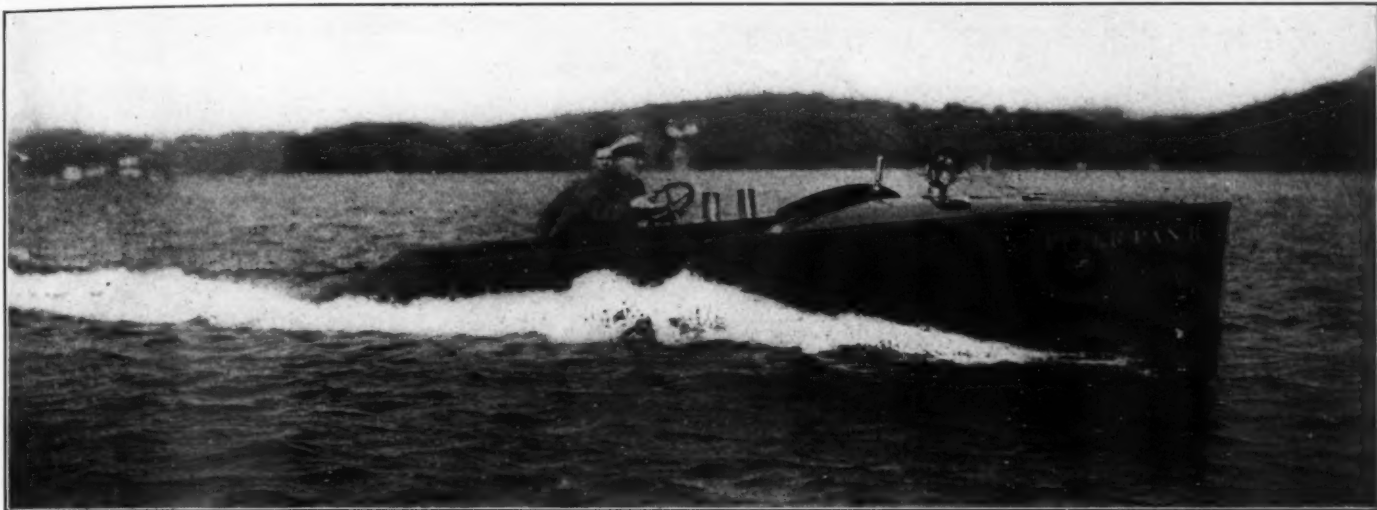
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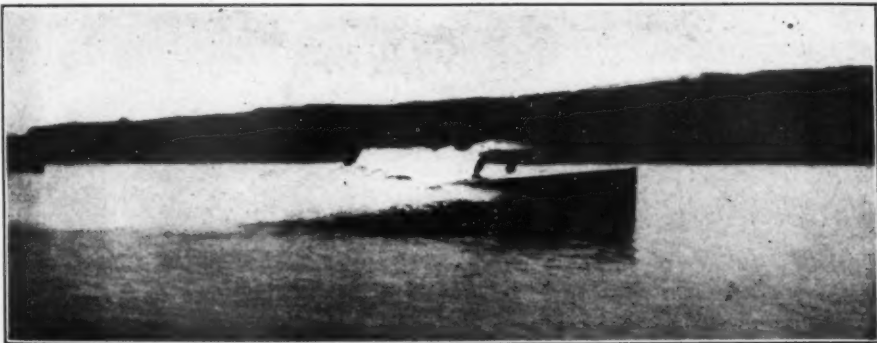
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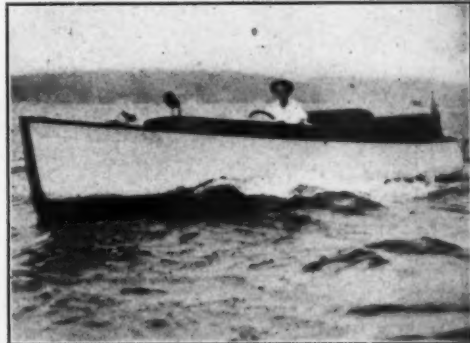
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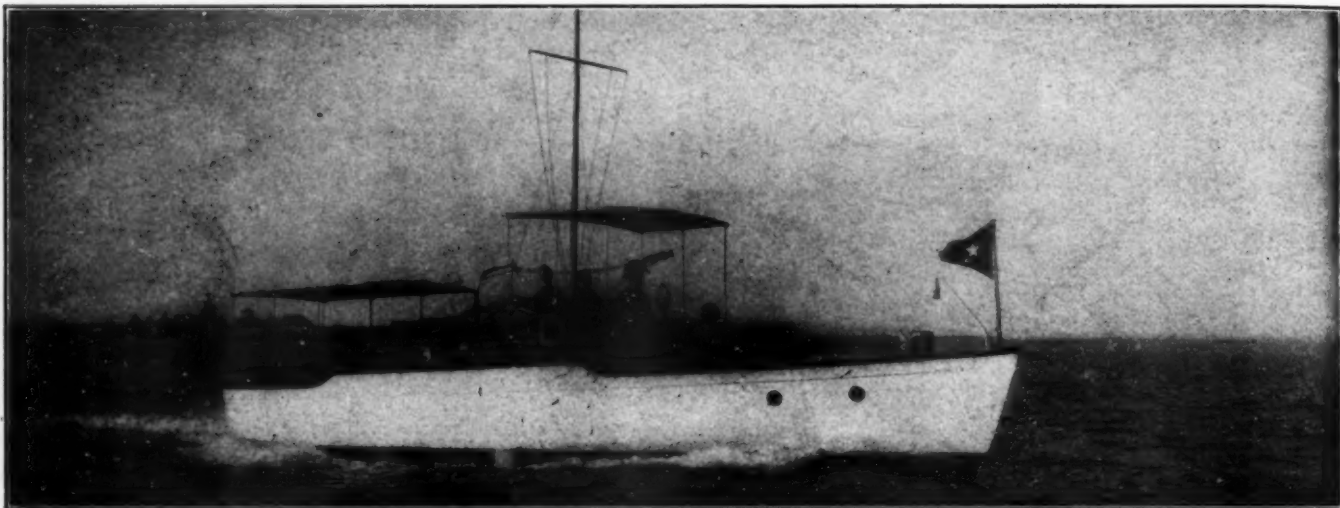
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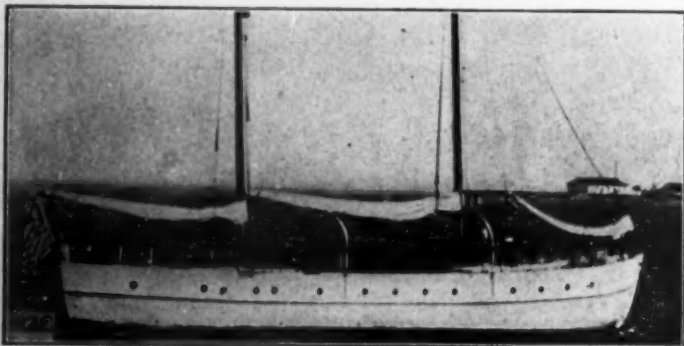
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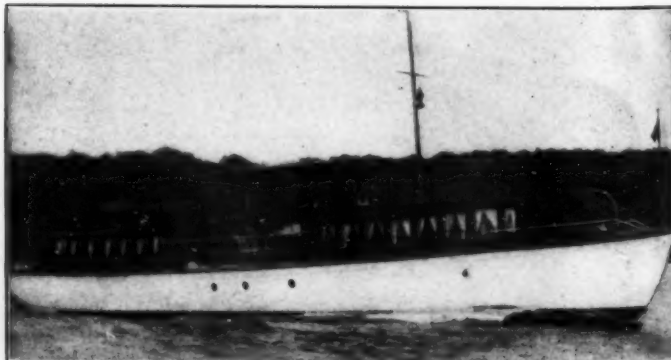
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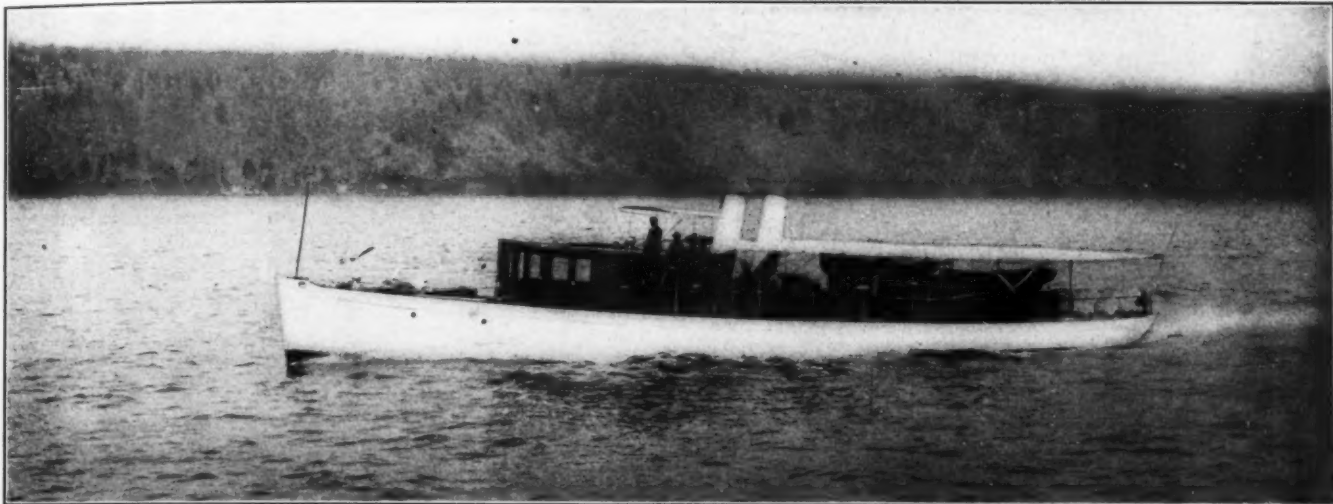
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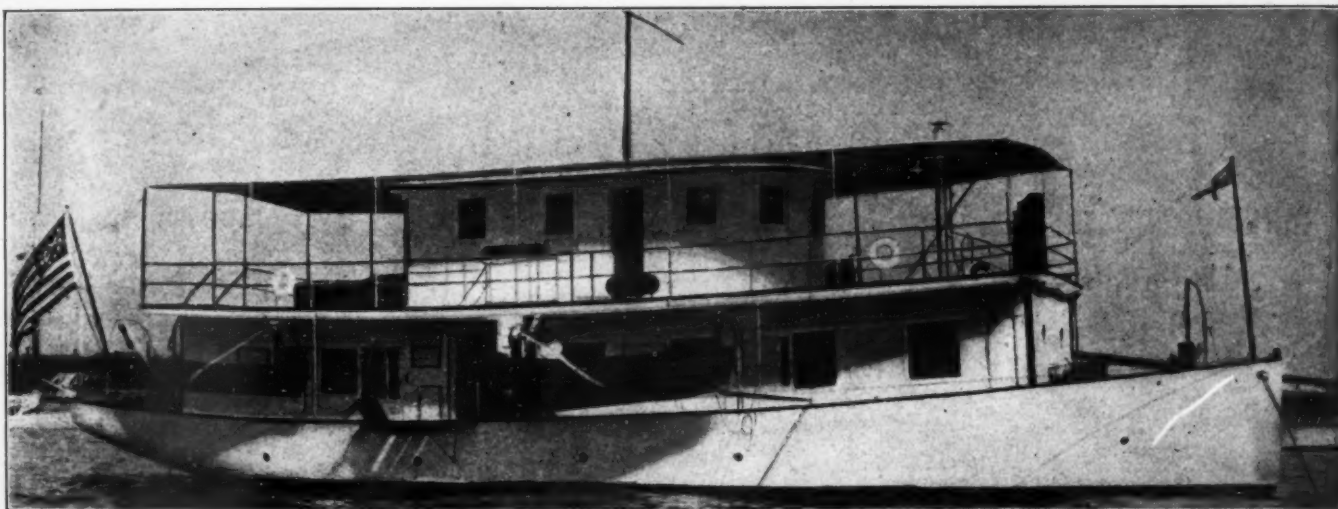
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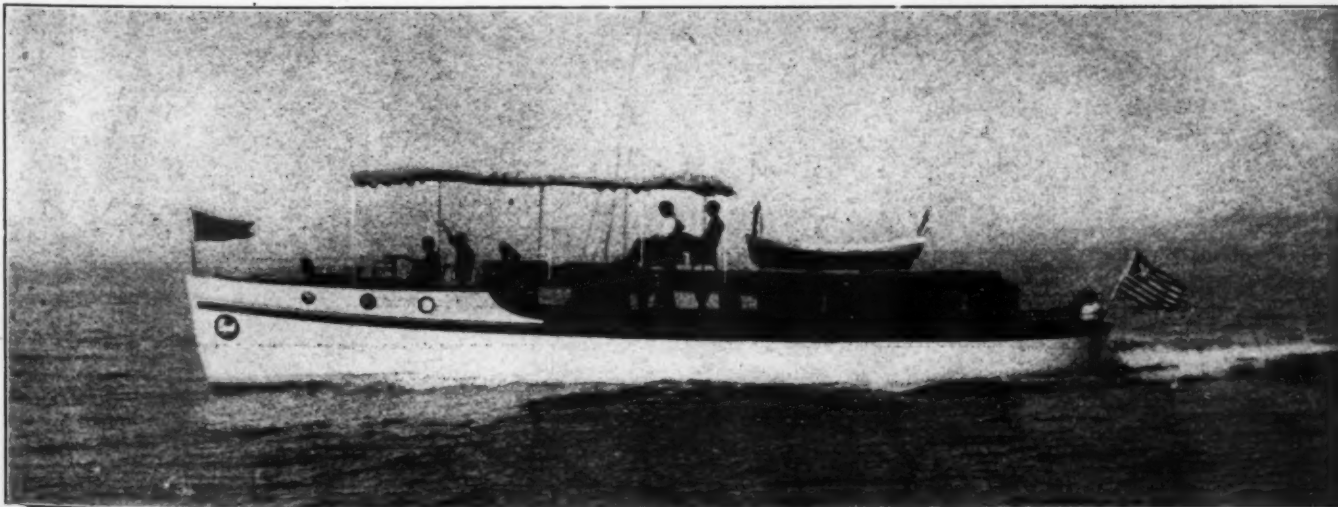
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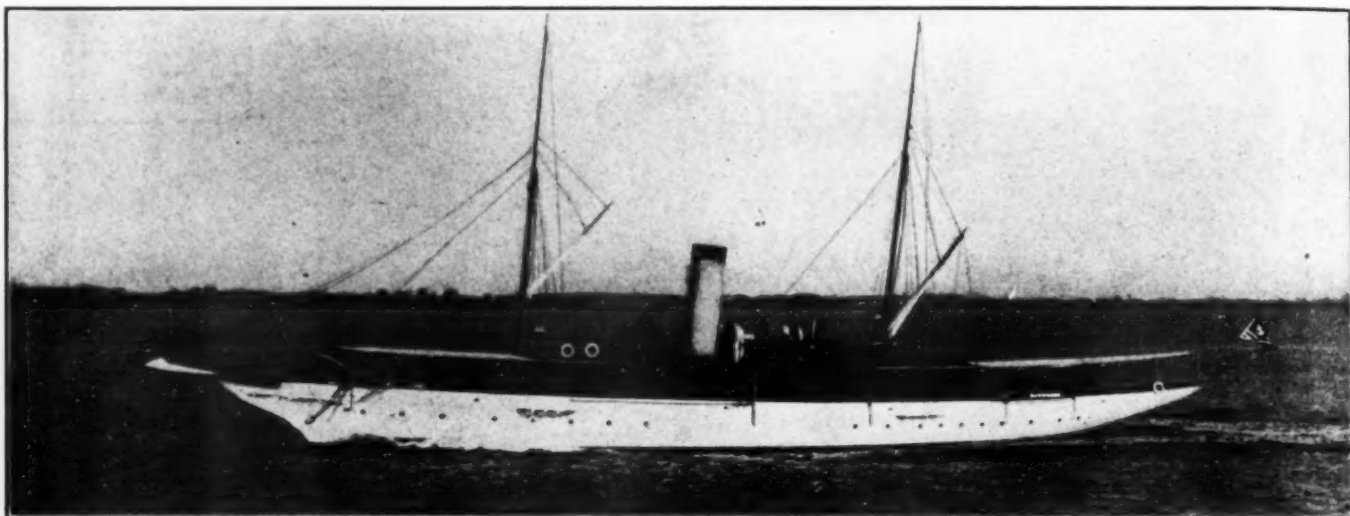
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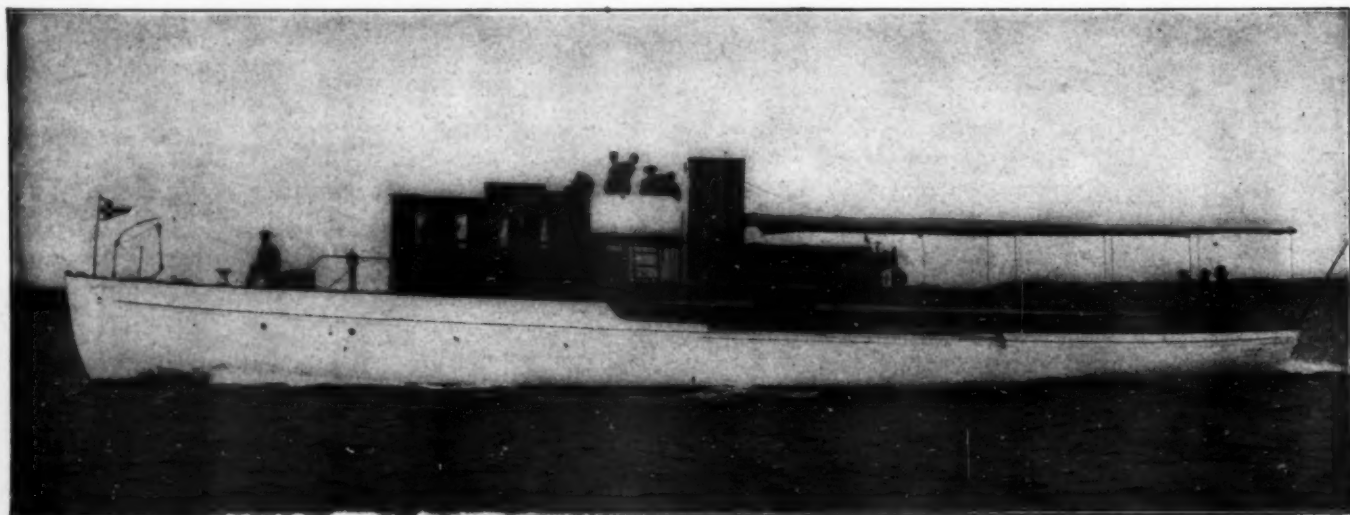
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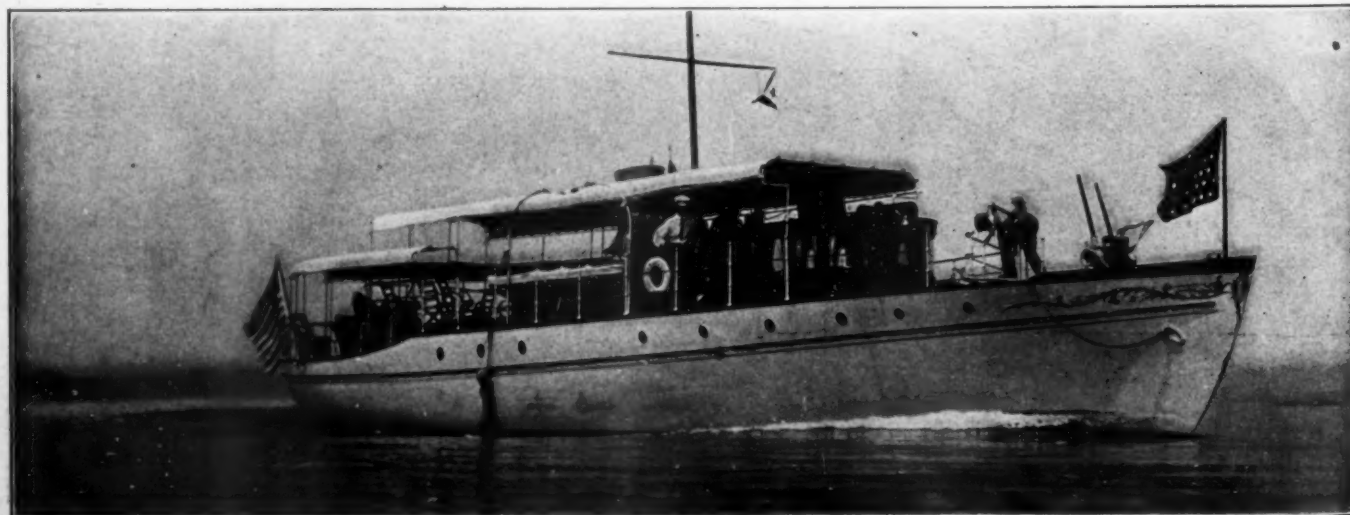
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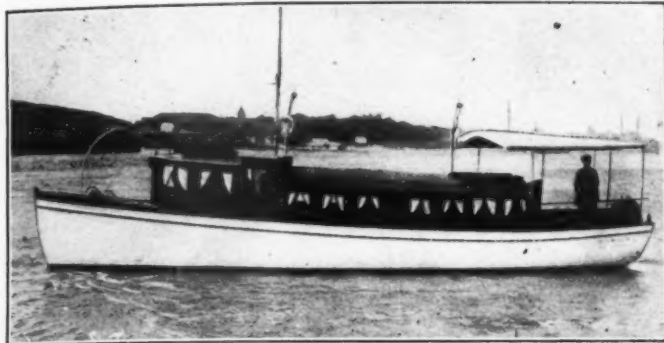
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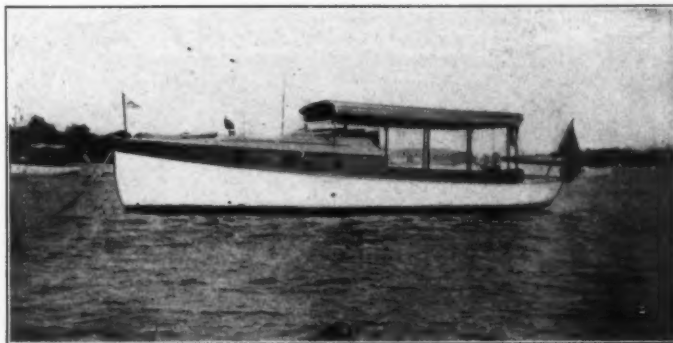
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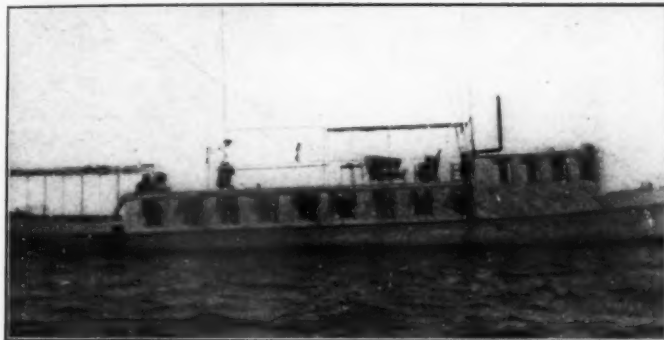
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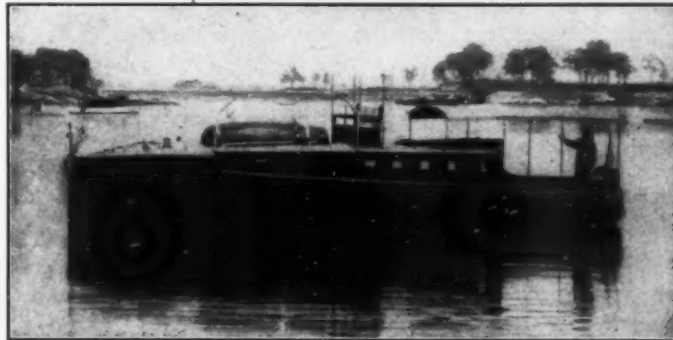
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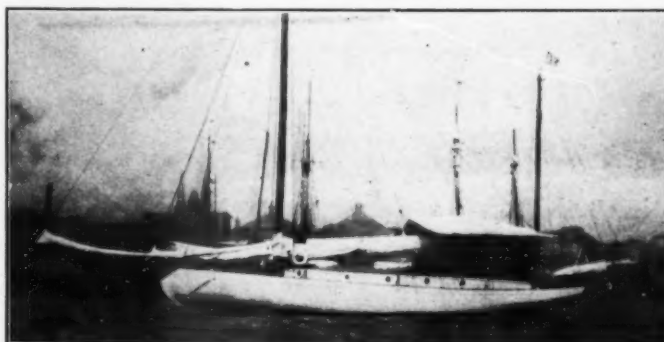
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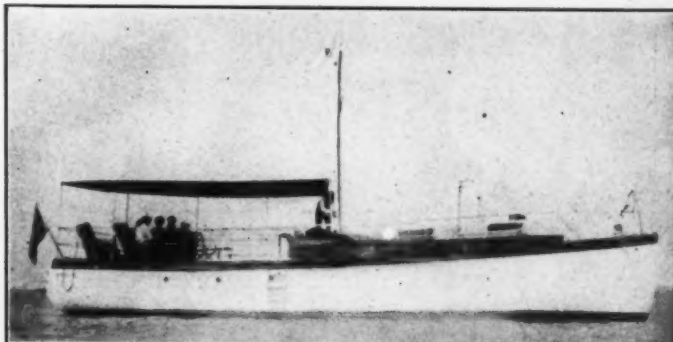
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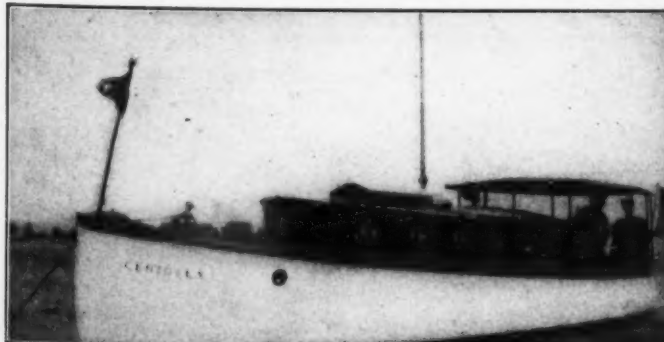
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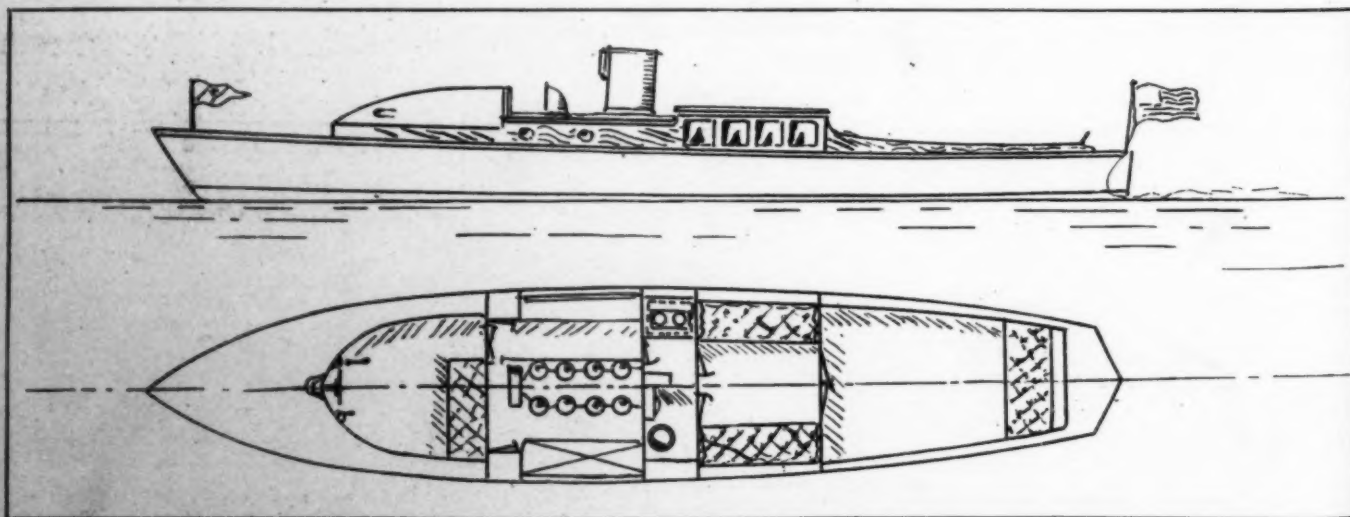
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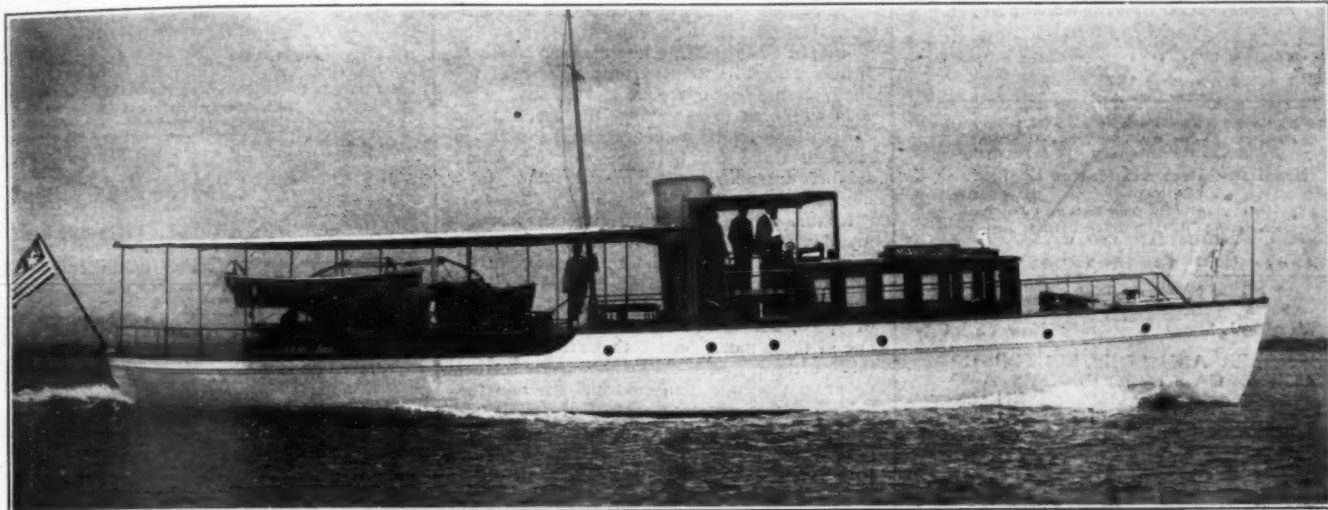
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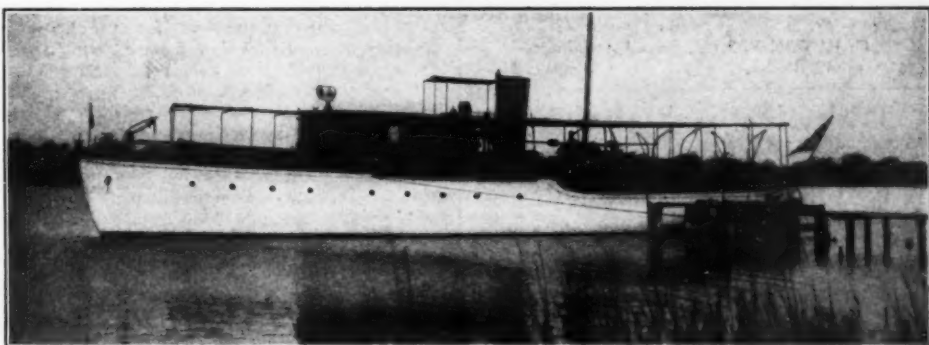
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**WILL SELL CHEAP FOR CASH** a 30 ft. by 5 ft. launch, seating capacity, fifteen persons; planking, 1/4-inch cedar; decks, black cherry; cockpit sealed and finished in black walnut, lockers and cushions; four-cylinder Leighton engine, 12 H. P.; all in good order. C. W. Joles, R. D. No. 1, Clayton, N. Y.

**OPPORTUNITY** desired in gasoline engine manufacturing by a man of demonstrated technical and executive ability. Engineering education and ten years' practical experience in engineering, construction and gas engines. Competent to take charge of production. Salary of less importance than good connection. Address Box 68, Motor Boating.



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- One 20-ft. Family Launch, 6-h.p. Watertown; completely equipped.
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**B**RAND new Roberts non-backfiring engines at less than factory cost, from our 1910 stock, which we must close out at once. J. T. Haynes & Son, Newark, Ohio.

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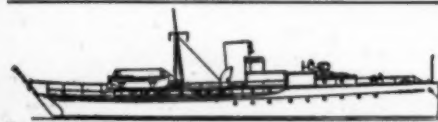
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## Before You Build Your Boat

consult a naval architect and state  
your needs and wants.

On this page are the announce-  
ments of the representative naval  
architects of this country.

A naval architect is to the pros-  
pective motor-boat owner what  
the building architect is to the  
man who is about to have a house  
erected.

## Regarding the Interior Ar- rangement of the Open Boat.

THE best interior arrangement for a mo-  
tor boat of any size is largely a matter  
of personal choice, as to its adaptation  
to a particular model and to the waters upon  
which the boat is to be used.

One motor boat owner will prefer his boat  
arranged with weight so distributed that the  
maximum speed may be obtained, at the sacri-  
fice, if need be, of personal comfort or the  
comfort of his guests, while another may care  
little for speed but insist on ample room for  
the pleasure of operator and guests. One  
man will want to so arrange his boat that he  
can easily operate it alone, while another is  
satisfied if he can hold the steering wheel,  
leaving the management of the motor to a  
mechanic.

In this article I have attempted to convey  
my idea as to the best interior arrangement for  
an open motor boat of about 25 feet length, of  
a suitable model for use on our inland lakes  
and rivers, arranged with the end in view, not  
of speed, but roominess and comfort. I am  
one of those motor boat enthusiasts who loves  
the sport for sport's sake and am a firm be-  
liever in the "one man control," wherein the  
helmsman has absolute control of and is re-  
sponsible for the whole boat.

In my own boat the motor is in front of  
the operator and in such a position that no  
difficulty is experienced in watching it care-  
fully without in the least attracting his at-  
tention from the course he is steering. The  
spark coils, oiling system, engine control le-  
vers, starting device, and reversing gear lever  
are all within easy reaching distance, which  
gives the operator the highest confidence in  
his ability to cleverly manage his craft. He  
has ample room to manipulate these various  
levers without interfering with the comfort of  
his guests, and thus a frequent source of an-  
noyance is avoided.

The reverse gear, instead of being located  
near the engine, as is usual in boats of this  
type, is located as far toward the stem as pos-  
sible, and is operated by a rod running forward  
under the floor to the reverse operating lever  
at the forward end of the boat. This location  
of the reverse gear serves a double purpose,  
first it gives the operator more room for his  
feet and second it helps to balance the weight  
of the motor which is placed as far forward  
as possible.

So much for the comfort of the operator,  
and I consider this a matter of prime im-  
portance if one is to take the maximum  
amount of enjoyment out of his motor boat  
on every occasion.

The seating arrangement for the guests  
is of course optional, but I have found the  
arrangement submitted to be the most satis-  
factory. It gives every passenger the max-  
imum amount of room and distributes the  
weight evenly. The stationary seat at the rear  
of the cockpit serves to cover the reverse  
gear which projects above the floor, and also  
gives opportunity for the construction of  
lockers, of which too many cannot be found  
on board a motor boat.

Of course, with some other model of boat  
this arrangement may not be possible, but in  
this particular model, which is of the average  
type, it is very comfortable and decidedly sat-  
isfactory.

E. D. G., Three Rivers, Mich.

## Side Seats With Engine Amidships.

THE common seating arrangement of run-  
ning a stationary seat around the cock-  
pit has marked advantages over the  
open cockpit with the movable chairs. If the  
seats have a good thorough coating of a  
standard varnish or are properly cushioned,  
the boat looks better than with the open  
cockpit. The open cockpit is comfortable on  
a river or small body of water, but side seats

(Continued on page 74.)

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Assoc. Inst. N. A.

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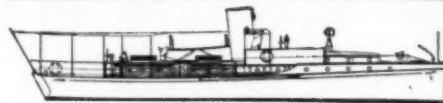
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a house boat to an auxiliary;

If you want to sell a boat of any  
kind;

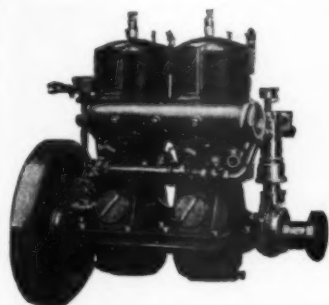
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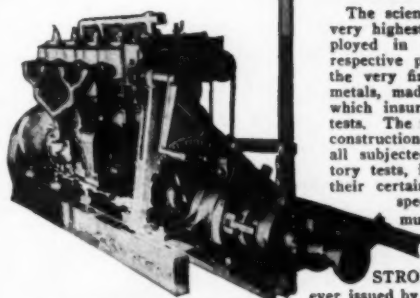


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 Single cylinder and 7  
 to 8 and 12 to 14 H. P.  
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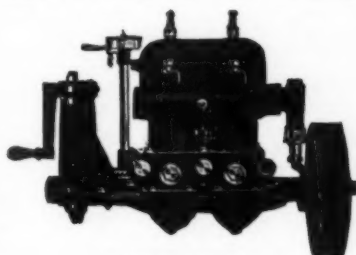
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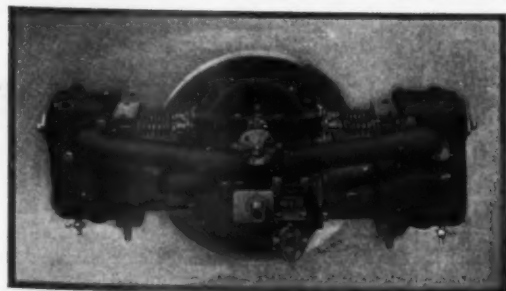
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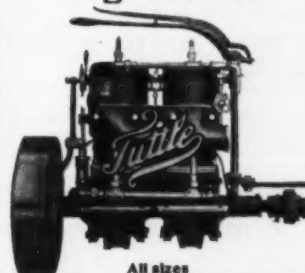
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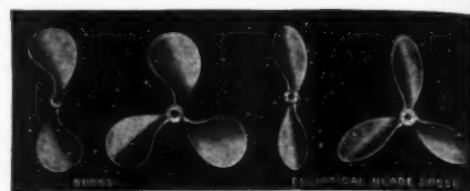


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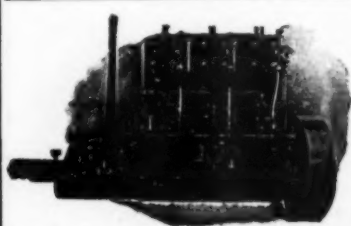
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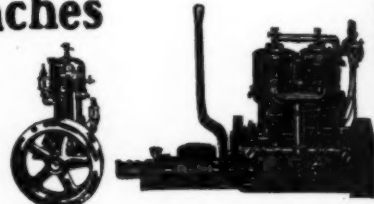
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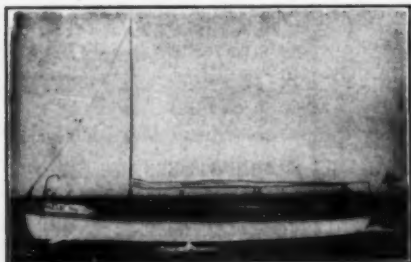
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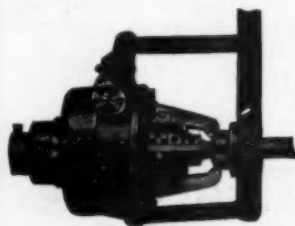
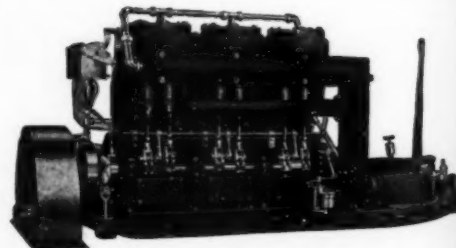
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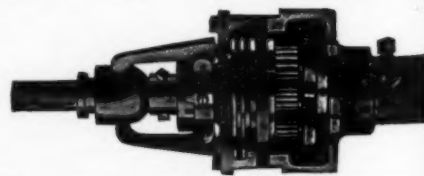
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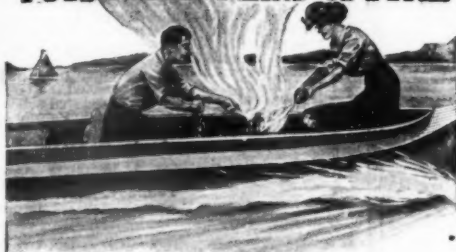


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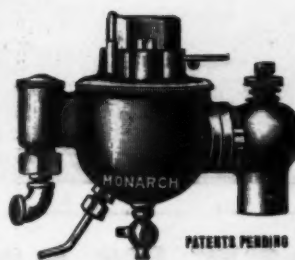
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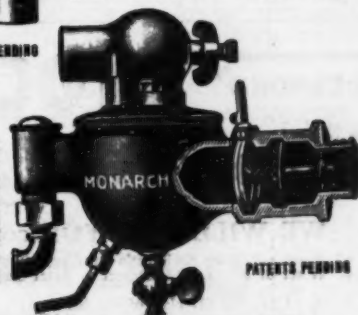
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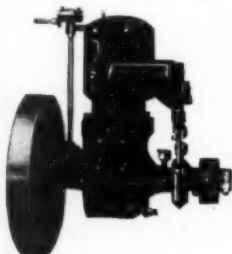
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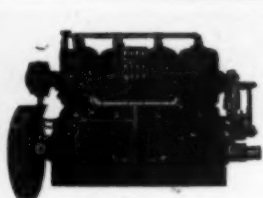
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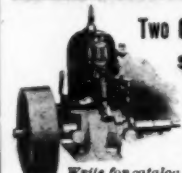
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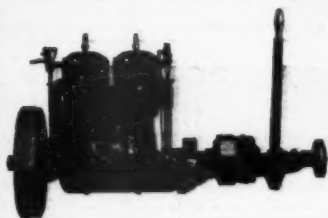
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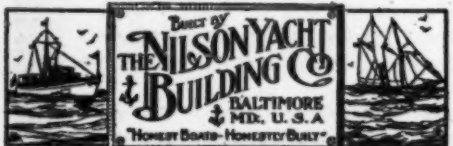
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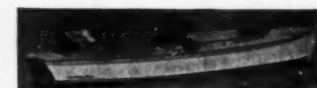
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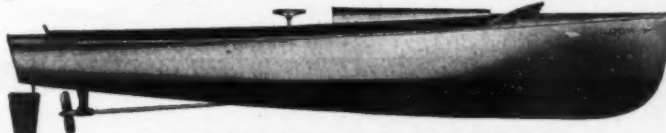
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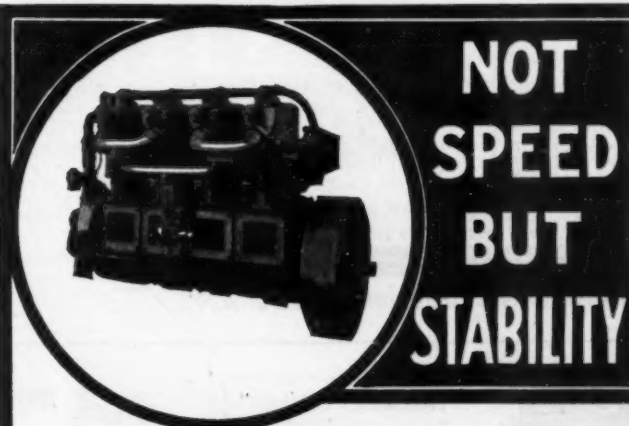
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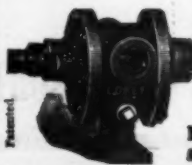
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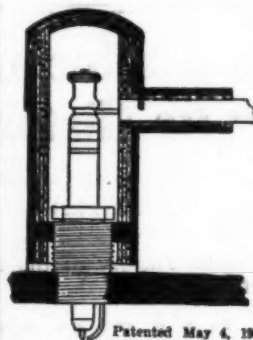
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If you want Good Circulation on your Automobile, Launch or Motor Boat use a LOBEE PUMP

Lobee Pump & Machinery Co.  
57 Bridge Street - Buffalo, N. Y.

When writing to advertisers please mention MOTOR BOATING, the National Magazine of Motor Boating.



Patented May 4, 1908.

### NOTICE

Hundreds of people have answered our previous ads and are happy. Are you going to answer this one? We are only giving away a limited number of these in this manner as a medium of quick advertising. For the first 200 inquiries received we will send postpaid an article worth \$1.00. DON'T hesitate. This device is positively waterproof.

Burnham Spark Plug Co.  
East Edgecomb, Maine.

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Is superior in efficiency to any other on the market

**WE HAVE THE PROOF**

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Spark Coils, Plugs, Storage Batteries and Lighting Outfits.

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### Pfanstiehl Magnetos and Coils

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It's free. It's of interest

HAROLD W. BROWNE

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We are the best known makers of marine models in the country. Let us duplicate your boat in miniature. We also develop inventions and build and design special machinery. Write us today what your needs are.

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## "Regal Users Write Our Advertisements"

"About a year ago I bought through your agent here, Mr. S. P. Soronsen, a 16 horse-power four-cylinder Regal engine.

"I must say that it is the easiest running and cheapest engine I ever saw. I have run over 600 miles with it this summer and it has not cost me one cent in repairs. I examined it carefully the other day and I found it in as good a condition as the day I received it. My boat is 32 ft. long and 7 ft. beam, and I can hold a speed of 10 miles an hour for 10 hours straight, or longer.

"I can highly recommend your engine to anyone and will take great pleasure in showing it to them. I have made two 55-mile trips and one 110-mile trip and she never missed a beat. It run like a sewing machine. The people that were with me said it was the slickest running engine they ever saw. I am certainly pleased with it."

CAPT. THOS. HOATSON, Laurium, Mich.

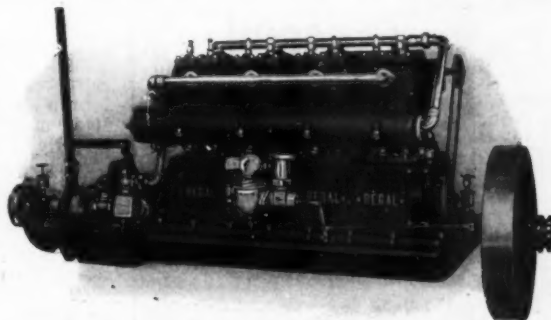
## REGAL GASOLINE ENGINES

are the most economical engines in fuel consumption and maintenance because they are first properly designed and then made of the best materials by skilled men.

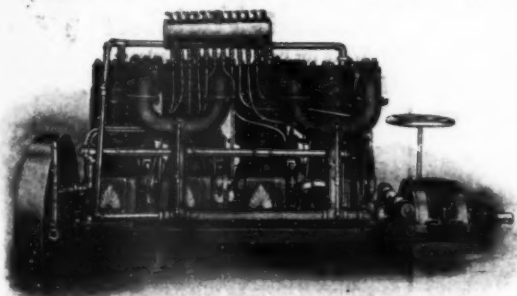
Regals always go.  
Built for high speed or heavy duty; 1 to 4 cylinders; 3 to 45 H. P. We guarantee satisfactory operation.

Send for Catalog No. 35 before you buy an engine.

**Regal Gasoline Engine Co., 74 West Pearl St., Coldwater, Mich.**



## OLDEST AND BEST KNOWN ENGINE ON THE MARKET



WHILE THIS IS OUR FIRST ADVERTISEMENT IN "MOTOR BOATING," OUR ENGINES NEED NO INTRODUCTION TO THE AMERICAN PUBLIC. WE HAVE BEEN BUILDING FOUR CYCLE MARINE ENGINES SINCE 1891, AND THE THOUSANDS OF OUR ENGINES IN USE ALL OVER THE COUNTRY ARE OUR BEST RECOMMENDATION.

SEND FOR CATALOGUE NO. 14.

## "GLOBE"

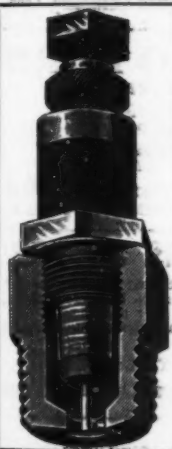
THE REAL HEAVY DUTY ENGINE

IDEAL POWER FOR CRUISERS  
AND COMMERCIAL BOATS

FOUR CYCLE TYPE, 3 TO 100 HORSE POWER.

**PENNSYLVANIA IRON WORKS CO., EDDYSTONE, PA.**

(WE HAVE A NUMBER OF REBUILT ENGINES FOR SALE, SEND FOR OUR LIST AT ONCE.)



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### THE FOLLOWING JOBBERS HANDLE COMET and SOOTLESS SPARK PLUGS

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## THE WATERMAN

### Special Speed CANOE or Racing Yacht Tender



This is a specialty with us and it is one of the most popular and satisfactory crafts ever produced. Designed and built especially for us by the leading canoe builders of America. Constructed on the most approved speed lines and very staunch. Mahogany trimmed, making it a very handsome boat; specially designed for our famous Model "K" Motor. Length, 20 feet; beam, 3½ feet; equipped with 1, 2, or 4-cylinder motor, or 2-cylinder motor and twin screws. Price \$300.

Send for catalog showing Our Indian Model Canoe, a gem in beauty and speed. Lengths from 16 to 20 feet. Equipped with Waterman Special Canoe Motors. Greatest ever. No matter what sort of a Marine (gasoline) motor you want, you will be on the safe side when you buy a "Waterman." All Waterman Marine Motors are equipped with Schebler Carburetors.

**WATERMAN MARINE MOTOR CO., 1531 Fort St. West, DETROIT, MICH., U. S. A.**

Bowler, Holmes & Hecker, 141 Liberty St., New York City (Distributors Greater New York); Arthur P. Homer, 88 Broad St., Boston (Distributor for all New England east of Connecticut River); James M. Watt, 1205 Michigan Ave., Chicago (Distributor Chicago and all adjoining counties in Indiana, Illinois and Wisconsin); Rober Machinery Co., Portland, Oregon (Distributors for Washington and Oregon).

What others say about the

TRADE MARK  
**PARAGON**  
REVERSE GEAR  
A Prominent  
Engine Builder

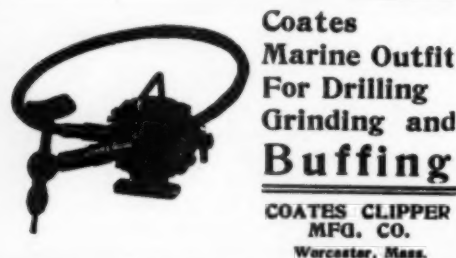
Patented  
Oct. 20, 1908  
April 13, 1909



"There is but one good reverse gear on the market. We do not manufacture reverse gears, but having made exhaustive tests with the most prominent makes we are in a position to recommend most highly the Paragon"

Sole Manufacturers  
**Evans Stamping & Plating Co.**  
Cushman St., Taunton, Mass., U. S. A.

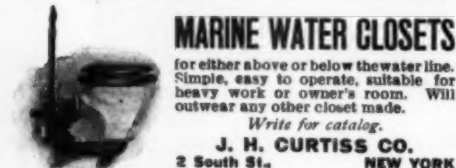
**Coates**  
Marine Outfit  
For Drilling  
Grinding and  
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COATES CLIPPER  
MFG. CO.  
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For Your Boat Next Year  
**Walt for the "1911 Syracuse"**  
Consider this engine—the success it has had—the satisfied purchasers of engines last year.  
Write for free catalog—to-day—and learn about the PATENTED COMBINATION EXHAUST that, giving more power, puts the Syracuse in the lead and keeps it there.  
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**MARINE WATER CLOSETS**  
for either above or below the water line. Simple, easy to operate, suitable for heavy work or owner's room. Will outwear any other closet made.  
Write for catalog.  
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**Strelinger Marine Engine**  
BUILT EXPRESSLY FOR HARD SERVICE  
Send for free catalog today  
**The Strelinger Marine Engine Co.**  
171-175 Woodbridge St., West, Detroit, Mich  
Agents Wanted

**SAMSON TILLER ROPE**  
Solid braided cotton with center of bronze wire. Strong and durable, and will not stretch nor rust. Send for sample.  
**SAMSON CORDAGE WORKS, Boston, Mass.**



Before purchasing elsewhere investigate the  
**BELLE ISLE MOTOR**  
Noted for its Simplicity, Economy and Durability.  
Postal will bring illustrated catalog.  
**BELLE ISLE MOTOR CO.**  
12 Motor Boat Lane, Detroit, Mich.



(Continued from page 62 b.)

are preferable if rough water is to be met with, because of their firmness in opposition to the rather unstable qualities of the chair method of seating. Also, it is more bother for a person to pass among scattered chairs than along a free center aisle. Side seats facilitate entrance to and exit from a boat, since they form a step very handy, especially for ladies. It is much easier to distribute the weight properly on side seats than in chairs, an important consideration, especially in rough water, in the comfort and proper management of a boat under thirty (30) feet. Side seats furnish valuable locker and storage room not to be obtained elsewhere, and sometimes chairs "mysteriously" disappear, but side seats always remain, and who wants to bring a lot of chairs along every time he goes boating?

The method of dividing the cockpit about amidship into the sections, by a cross partition, immediately in front, or aft of which the engine is generally placed, is faulty. It divides the boat and the party too arbitrarily for the best enjoyment and satisfaction; it is generally unhandy and hinders greatly quick action in managing a boat. The best arrangement is stationary seats completely encircling the cockpit, with a break on the non-exhaust side of engine to allow free passage from bow to stern, and the engine somewhat to the rear of center. The party is thus happily divided, as is sometimes desirable and never objectionable, but not arbitrarily separated. The "Toppan Safety Launch" is a good illustration of this type.

PAUL S. NICKERSON, Lewiston, Me.

### Used Knock-Down Frames.

THE selection of a tender is probably as important an item as the cruiser itself, and an ideal tender must not only be light but also compact, and at the same time afford ample accommodation and carrying capacity. Another point to be considered is the appearance, as there is no doubt a handsome dinghy adds greatly to the appearance of any boat.

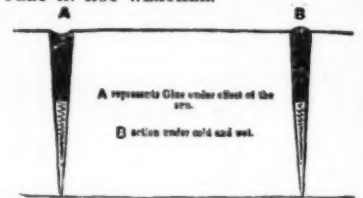
Some time ago I had this same question in mind, I had become tired of towing a big heavy skiff around wherever I went, and usually finding her half full of water whenever we encountered any sort of a seaway, so I looked the market over carefully to see just what I could find to avoid this inconvenience and secure a boat that I could carry on deck when making a lengthy run. After making inquiries regarding several different types I selected a tender made by one of the manufacturers of knock-down boats whose "adv." appears in the pages of this publication. She is a round bottom boat, nine ft. o. a., 4 ft. beam with a depth of 18 inches amidships. Purchasing only the frames and planking her after an idea of my own, using 1/4 inch cypress covering it with 10 oz. canvas laid in marine glue, and then replanking with another layer of 1/4 inch cypress, staggering the seams so that no two met. This made her light and at the same time perfectly dry, and stiff enough to stand any amount of hard usage. Finished up in the natural wood, she is as neat a little tender as one could desire and at a total cost of less than three dollars a foot. As a protection to her, and at the same time save the sides of my cruiser, I hitched a fender to run completely around her increasing it in size at the bow, amidships, and at both corners of the stern. To do this I purchased a piece of inch cotton rope and several hanks of one-eighth inch cotton line and knitted a cover over the rope after parcelling it well to make the fenders at the bow, amidships and stern, then serving each end of the fenders with a rope yarn. This made a neat and shipshape looking fender which protected her at all points.

The next question that confronted me was where I could stow her to the best advantage.

(Continued on page 82.)

### APPLICATION OF MARINE GLUE TO DECKS

The reduced Section of Deck (see cut) shows the appearance of the Glue in the seams when the planks are under expansion and contraction. The flexibility of the Glue is one of its most valuable qualities, as it allows the timbers to contract and expand, still retaining its great adhesive power to the edges of the plank.



Fourteen pounds Jeffery's Extra Quality Marine Yacht Glue will run from 200 to 250 ft. of seam three-quarter in. deep by one-quarter in. wide. If properly used and not over-heated, it will last four to six years in a seam, and has been known to last ten to twelve years. When carefully applied to a dry deck it will never leave the sides of the seam.

Send for directions for use, etc.  
L. W. FERDINAND & CO., 201 South Street, BOSTON, MASS., U. S. A.

### Broga Automatic Curtain Fastener

Write for Free Sample Fastener  
**BROGA AUTOMATIC FASTENER COMPANY**  
370 West Fayette St., Syracuse, N. Y.

### Builders of High-Grade Racing and Cruising POWER BOATS

Also yacht tenders and sailboats. Write us.  
**LEYARE BOAT WORKS** Ogdensburg, New York  
Marine Railway. Winter Storage.

### High Speed, Four Cycle Marine Engines for Racing Craft and Hydroplanes

Four Cycle, Four Cylinder, 25 H. P. to 40 H. P.  
Four Cycle, Six Cylinder, 75 H. P. to 100 H. P.  
Also Builders of Four Cycle Medium Duty Yacht Engines  
**HARRIMAN MOTOR WORKS, Inc., South Glastenbury, Conn.**

### MIANUS MOTORS

Built to last a lifetime  
MEDIUM WEIGHT, MODERATE  
SPEED, PLENTY OF POWER.  
15,000 in use on the Atlantic Coast  
Since 3 H. P. to 40 H. P. Catalogue free.

**The Mianus Motor Works**  
Main Office and Factory, MIANUS, CONNECTICUT U. S. A.

### ROBERTS MOTORS ON TOP

W. H. Mullins Co., the largest boat builders in the world, recently placed an order for 2,000 **Roberts Motors**, the largest single order for motors ever placed.  
That ought to induce you to investigate the **Roberts Motor**.

SEND FOR CATALOG  
THE ROBERTS MOTOR COMPANY, 1501 Columbus Ave., Sandusky, Ohio

### Ask the man who owns a Pierce - Budd Marine Motor

In the meantime send for Catalog  
**Pierce-Budd Co.**  
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### Hopkins MOTOR BOAT & YACHT OUTFITTERS

SPECIAL: **Hopkins Life Preserver Cushion** excels the Standard Government Life Preserver in every way. Price \$1.25, express paid, to any part of United States.

Send for our big Catalog, 119 Chambers St., N. Y.

Get the BEST  
from your Boat and Motor by  
using the Best Pusher, viz:  
**A GORDON Adjustable  
Blade Propeller**  
Agents wanted in boating centers.  
**THE GORDON PROPELLER CO.**  
9053 Desmond Ave., N. W., Cleveland, O.



When writing to advertisers please mention **MOTOR BOATING**, the National Magazine of Motor Boating.



**"It Sparks In Water"**



# Reliance

## Reliance Spark Plugs Stand Every Test

They defy soot, carbon and the elements. They need no attention. They are the best plugs you can buy.

They give your engine a spark which increases its efficiency. No cylinder combination has ever beaten them.

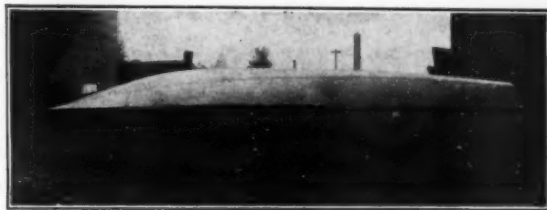
**TEST THEM.** Place two plugs (one Reliance and one of any other make) in a glass of water and turn on the current. EVERY TIME you will see the little blue spark that counts—in the Reliance ONLY.

Be sure that your dealer gives you Reliance. They save trouble and worry.

**Jeffery-Dewitt Co.**  
Makers of Reliable Spark Plugs  
57 Butler Ave., Detroit, Mich.



**THE STRONGEST, HANDSOMEST, SPEEDIEST, MOST DURABLE and CHEAPEST BOATS EVER BUILT**



## Hyde Knock Down Metal Boats

Made from Ingot Iron, a non-corrosive metal of superior tensile strength.

Puncture-proof—three times as great resistance as oak of the same weight.

Easily Assembled—Only five pieces to rivet and solder. Perfectly fitted and bolted together before leaving factory.

Low Price—Cost half as much as wooden hulls of the same design and size.

If you want a boat of beautiful lines, for strenuous service, send for *FREE* Catalogue.

**Hyde Metal Boat Company**  
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## READ THIS

**The Famous Michigan Speed Wheels** are used on the majority of speed boats to-day. They are the fastest propeller wheels ever designed, and will increase the speed of your boat over any other wheel. They are made of the best quality of bronze, highly polished and balanced; will not break, but last a lifetime. We have a large selection of designs, suitable for all classes of boats. Prices ranging from one dollar upwards.

**Reverse Gears.** The old reliable Michigan has been on the market for eleven years and is still the leader. They are not only used on speed and pleasure boats, but the only gear adopted for ferry and working boats, owing to its simplicity of design, strength and durability. Sizes, one up to one hundred H. P. Prices, eighteen dollars upwards.

Let us give you the benefit of our long experience in selecting a speed wheel or reverse gear, by stating your requirements with full data of boat and engine.

Don't order until you have sent for our large two-colored catalog, which is full of valuable information. Sent free.

Send for No. 10 catalog to-day.

**Michigan Wheel Co.**  
556 Canal St. Grand Rapids, Mich.



It is easy to have perfect valves if you use



## Carborundum Valve Grinding Compound

Put up in two collapsible tubes—one containing coarse mixture for first rough grinding—the other containing a fine mixture for finishing—A package of Carborundum cloth for cleaning Carbonized matter from vibrator contact points, and a book of Carborundum Cloth for general use about the engine goes with each outfit—

*The Carborundum Compound is sharp and wonderfully quick cutting—Produces a perfectly true Contact Seat—Per box 75 cents.*

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Niagara Falls, N. Y.

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For fifteen years T & M Marine Engines have astonished the Motor buying public with their demonstrations of service, power and speed. For fifteen years they have carried away first prize in every important motor boat contest in which they have been entered.

### T & M ENGINES

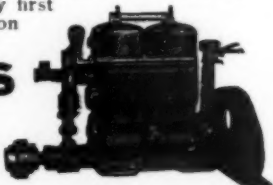
2 H. P. to 120 H. P.

Made in twenty sizes, for every type of craft. The most simply constructed engine on the market. Liberal dimensions, honest ratings, best materials and finest workmanship. Used all over the world by the most conservative buyers, who decide only by rigid tests and comparisons.

### Valuable Pointers Free!

It's filled with things you want to know about Marine Engines, shows a number of cup winners and tells all about T & M Marine Engines. A postal will do—send NOW while you think of it. (23)

Termaat & Monahan Co., Dept. C, Oshkosh, Wis.



## "VANBLERCK" MARINE MOTORS

2 cyl. 5 x 6 12-15 H. P.

4 cyl. 5 x 6 25-30 H. P.

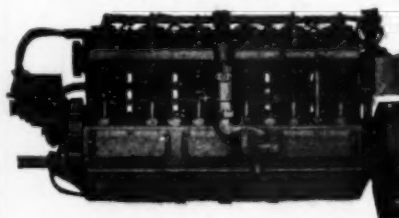
6 cyl. 5 x 6 40-60 H. P.

For Pleasure and Cruising Craft

4 cyl. 5 1/2 x 6 40-60 H. P.

6-cyl. 5 1/2 x 6 60-80 H. P.

For Semi- and Racing Craft



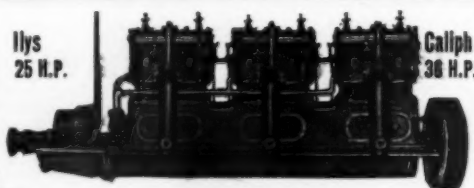
These motors and equipment are strictly first class, built for hard service, are absolutely reliable and efficient, and fully guaranteed. Our descriptive catalogue will be sent to interested parties upon request.

### VANBLERCK MOTOR CO.

DETROIT . . . . . MICHIGAN

## HALL ENGINES

115  
25 H.P.



Callph  
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First to Havana  
First to Key West  
First to Atlantic City

5600 miles at full speed in rough weather, the Gulf Stream and the tropics, under all conditions of climate and elements.

Winning Four [4] Cups Out of Five [5].

Also Winner of Greatest Race of 1909 from Bermuda to New York. No Handicap. Boat for Boat.

1 TO 6 CYLINDERS

Winner of the National Championship & Challenge Races of New York in 1909.

Winner of every race entered in cruiser class in United States in 1909. A record which has never been equaled.

Send for Literature Today

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Bridenburg, : : Philadelphia, Pa.

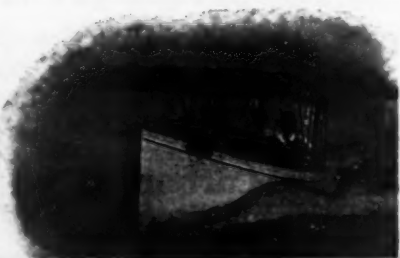
AGENTS WANTED

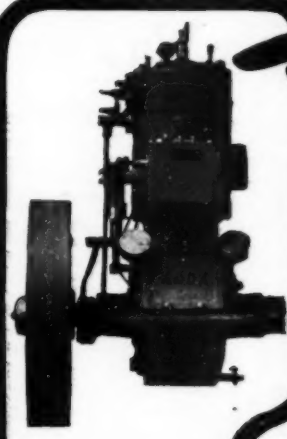
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If you're thinking motor-boat, you ought to know all about Outing boats before you buy. Write to-day for the Outing Boat Book, prices and full information. Mailed free.

Outing Boat Company  
Dept. B  
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# Knox

**The Reliable Motor with the Power**

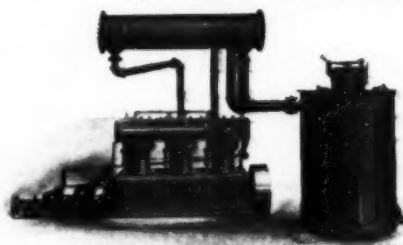
Remember the Motor is the Heart of your boat. Do not consider first cost only. Buy a Reliable and Powerful Motor so you can have the pleasure with your boat that you are expecting. The KNOX will give this to you.

Sizes—2 1/2 H. P. to 40 H. P.—Two- and Four-Cycle.

Send for Catalogue.

Camden Anchor-Rockland Machine Company,  
Camden,  
Maine, U. S. A.

## The Cheapest and Safest Marine Power



Operates on many of the good makes of four cycle gasoline engines at one eighth the cost. 25 to 5,000 H. P. sizes. Our catalogue tells you how to use and all about it. We guarantee results.

Marine Producer Gas Power Company  
2 RECTOR STREET, NEW YORK

## Packard IS ON THE SQUARE

Acknowledged  
the very  
Best

BOOKLET?



Don't  
Accept  
Substitutes

SAMPLES?

The Packard Electric Co.  
322 Dana Avenue Warren, Ohio



## STAR Air & Water Pumps

W. & J. TIEBOUT  
118 Chambers St.  
NEW YORK

### Marine Hardware

Motor Boat Supplies

Patented November 23, 1909



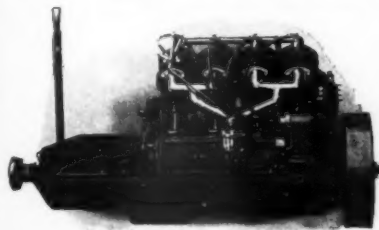
Will Mail Catalog on Receipt of 4 Cents Postage



## RELIABILITY STICKS OUT ALL OVER THE LOEW-VICTOR ENGINE

Don't tie up your money in a risky engine. Get one that will "stand up" through all kinds of weather—thick and thin—and through all kinds of conditions. The Loew-Victor can stand the rack of the high seas—where the propeller is half the time out of the water, subjecting the engine to intermittent bursts of speed and labor that would soon stall a less reliable and risky engine.

Buy the LOEW-VICTOR, the engine that never hesitates to do its duty



This is the Loew-Victor, 25 H. P. Marine Engine. So simple even a novice can run it.

**Price Only  
\$600**

for the engine with iron crank-case; \$630 with aluminum crank case. Write today for our handsomely illustrated engine book and more proof of the wonderful superiority of the Loew-Victor.

### NOTE THESE SPECIFICATIONS:

Type, 4 cylinder, 4 cycle, 25 H. P.  
Cylinder,  $4\frac{3}{4} \times 5\frac{1}{2}$  in.  
Water Pump, bronze, plunger type.  
Bearings, all die cast, of White Bronze Metal.  
Magnet, high tension Splitdorf.  
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Carburetor, "Schebler."

Reverse Gear, our own; all bronze bushed gears in oil-tight case.

Air Compressor, air-cooled type with fans for cooling.

Five Crank Shaft, drop forging.

Main Bearings, 2-inch diameter.



Photo of the Loew-Victor winning the race at Cleveland, O.

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At the Interlake Regatta held at Cleveland, Ohio, the Loew-Victor Engine was again Champion of Class Q. You can't beat this wonderful engine. In the supreme test of the race against time the Loew-Victor always upholds and maintains its amazing record. There will be no "breakers ahead" if you buy the Loew-Victor Engine.

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**THE LOEW MFG. CO., WEST 134th STREET, CLEVELAND, OHIO.**

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The fisherman, who goes out in any and all kinds of weather, day and night,—winter and summer,—puts his engine to the severest test possible.

His very livelihood depends upon the reliability of his motor, and he MUST have an engine upon which he can depend at all times and seasons, and under all conditions.

Do you want a better recommendation than this for the engine for your Motor Boat?



### Handsome Enough for the Finest Pleasure Boat

Remember, Mr. Boat-Owner, that while you do want an engine upon which you can depend, and which will stand up under all possible hard knocks, you do not want a rough looking, uncouth mass of metal to put in that handsome new boat of yours, and just because the KENNEBEC stands hard usage and exacting conditions, do not fancy it is a "rough jewel." It runs more smoothly and is the most completely equipped motor that you have ever seen, splendidly finished and

in any size exceeds its rated horse-power from thirty to forty per cent.

Ask the Fishermen what they think of the "KENNEBEC" ENGINE

Write for Catalog M

**Manufactured by TORREY ROLLER BUSHING WORKS, BATH, MAINE**

NEW YORK AGENTS:

**THOS. I. SIMPSON & CO., 68 South St.**

## Always Something New at **DURKEE'S**

*Manufacturers of*

### MARINE HARDWARE AND YACHT SUPPLIES



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SMALL AND POWERFUL**

Send for circulars describing same.

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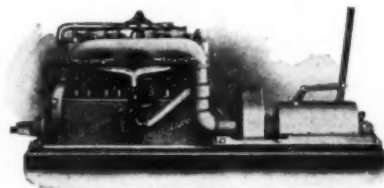
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**C. D. DURKEE & CO.**  
2 and 3 SOUTH STREET :: NEW YORK

*Oakland*  
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## The RIGHT Motor



**COMPACT**

**CLASSY**

**STRONGEST PULLING  
ENGINE OF ITS INCHES  
IN THE WORLD**

**THE WILPEN COMPANY**

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New York Agency: Room 31, 126 Liberty Street.

Pacific Coast Agency: 204 N. Los Angeles St., Los Angeles, Cal.

# Have You Ever Advertised in MoToR, Mr. Manufacturer?

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It is the recognized marketplace in motordom—the one place where the manufacturer can reach not only the whole automobile trade, but more automobile owners and prospective owners than any other motoring publication.

**MoToR** has the widest circulation of all automobile publications for the reason that its editorial pages appeal to the motor-car owner, the prospective owner and to everybody in the trade.

No matter what information anyone may want about motor-cars—their parts or accessories—it is the most reliable source.

**MoToR** keeps pace with the progress of the trade and a little ahead of the leaders in it.

Editorially, **MoToR** has something to offer its readers—something worth while in information and entertainment—and strong circulation efforts bring it to the attention of everybody interested in automobiles.

In other words, **MoToR** advertises itself—just as you advertise your business. It does all that every other motor-car publication does—and much more.

It circularizes registered automobile owners and advertises in daily newspapers and general magazines.

No automobile publication so strongly advertises for readers as **MoToR**—just as you do for buyers.

So far, **MoToR** has used space in daily newspapers throughout the country, aggregating a circulation of over two million readers per issue and in general magazines reaching at least another million readers.

**MoToR** is gathering to itself, therefore, the cream of the readers of these newspapers and magazines—the readers that respond to advertising.

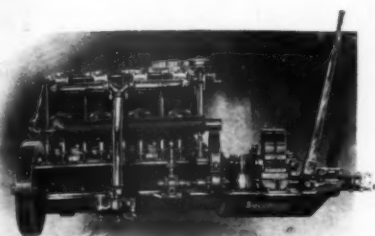
Since these people respond to **MoToR's** advertising in newspapers and magazines, they will respond even more readily to your advertising in **MoToR** where you appeal to them along lines of their special interest.

Remember **MoToR's** advertising pages are just as important to the reader, particularly to the prospective buyer, as the text pages. And who—veteran enthusiast or novice—is not a prospective buyer?

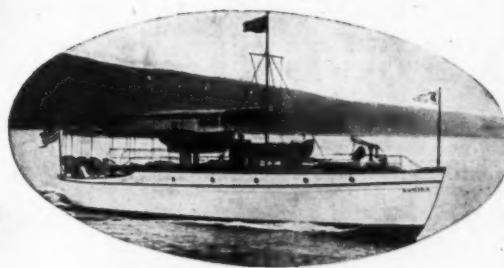
**MoToR**, 381 Fourth Avenue, New York City.

*When writing to advertisers please mention MOTOR BOATING, the National Magazine of Motor Boating.*





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**T**HE fable of "Just as Good" is working overtime in the boat and engine business. A lot of people want the Best, are willing to pay for the best; but where to get it is the question.

If in doubt, go to Seabury's.

Unscrupulous competitors promise much for little, and frequently fail to make good even with a little.

Reputations for high prices handicap buyer and seller, unless values by comparison are made.

It is simpler to many to make poor goods at low prices than for few to make good goods at high cost. A machine will make a cheap watch, but it needs the hand and brains of an artist to produce a really fine one.

*The moral of this is, when you want a good launch, yacht or engine, send for catalogue, addressing*

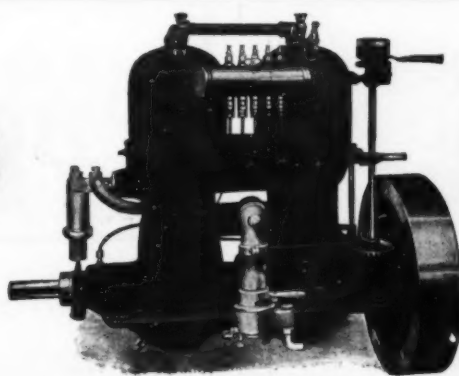
**GAS ENGINE & POWER CO.  
AND  
CHARLES L. SEABURY & CO.**

CONSOLIDATED

MORRIS HEIGHTS,

NEW YORK CITY

**Fox Motors  
NOW**



**FOR 1911  
READY**

### **The Most Complete Line of Two Cycle Motors Ever Offered in America**

4 sizes of **Fox Heavy Duty** two port motors 5 to 24 H. P. for commercial and pleasure boats of heavy construction. The best fisherman's motors ever built.

2 sizes of **Fox Special** three port motors  $3\frac{1}{2}$  and 7 H. P. for small boats of 14 to 22 ft.-yacht tenders, etc.

9 sizes of **Fox Medium Duty** four port motors 7 to 40 H. P. for model boats of all kinds requiring engine speeds of 700 R. P. M. to 1000 R. P. M.

8 sizes of **Fox De Luxe** four port speed motors 30 to 160 H.P. strictly for speed boats 1000 to 1400 R.P.M.

### **FOX MOTORS HOLD THE WORLD'S ENDURANCE RECORD**

From our 23 sizes and four distinct types you can select a motor exactly suited to your needs. All Fox Motors have large shafts and long bearings and every part is made to withstand continuous service.

Our Fox Fourth Port Accelerator, patented, is the greatest improvement ever made to increase the speed power and efficiency of two cycle motors. It has a wonderful record and we shall be pleased to tell you about it.

Remember that for eight years we have made and sold Fox Motors under a money-back guarantee and we are proud of the fact that even our first motors are giving satisfactory service today.

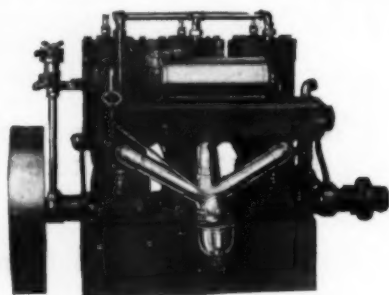
You won't make a mistake if you buy a Fox Motor. We offer special inducements for orders before January 1, 1911.

**SEND TODAY FOR CATALOGUE**

**THE DEAN MFG. CO., 262 Front St., "South Cincinnati," Newport, Ky.**

**BEST FOR ALL BOATS**  
**THE BRIDGEPORT**  
**"THE MOTOR THAT MOTES"**

SEMI-SPEED, MEDIUM-SPEED AND HEAVY-DUTY MODELS



We urge every prospective purchaser to use judgment in selecting a motor. Look over the various makes operating in your vicinity, compare fuel consumption, cost of repairs, delays for breakdowns, accessibility and actual interchangeability of working parts. Let established reputation, real genuine merit, guide you and you cannot go far wrong.

Send for catalog and special booklet, entitled "It's Up to You."

**The Bridgeport Motor Co., Inc.**  
**BRIDGEPORT, CONN.**

**Don't Get Caught  
 Like Larsen Was**

While Claus Larsen was tuning up under Niagara Falls for the trip through the Rapids, his engine stopped.

Power Boating says, "Larsen drifted down into quiet water before he tried to start the engine, but he neglected to shut off his pressure oil feeds and the engine flooded."

"A row boat towed him ashore." Over three hours passed before the engine could be run again.

**That couldn't happen with a Detroit**



The Detroit Force Feed Oil Pump starts and stops with the engine.

It remembers for you.

It never has to be regulated or adjusted. It gives you efficient, automatic, dependable, trouble-proof lubrication that never requires any attention at all.

A Detroit Oil Pump is engine insurance.

Write today for catalog A-64 and full information.

**DETROIT LUBRICATOR COMPANY.**

**DETROIT, U. S. A.**

*Largest manufacturers of lubricating devices in the world.*

**Does Reliability Mean Anything To You?**

Do you know when you start out that your batteries will last you until you get back?

Were you ever stranded with a weak spark?

If you have a Magneto, will it start and run the engine perfectly without batteries?

Does your Magneto have a lot of traps and triggers to go wrong or get out of repair?

Do you want to put an end to all your ignition troubles?

If so, get a



Ignition only, - \$35.00  
 Ignition and lights, - \$50.00

**K-W MAGNETO and a K-W COIL**

and forget there is anything like ignition on your engine.

**WE GUARANTEE**

every K-W Magneto to start the engine without batteries and run it perfectly at all speeds, from the very highest to the very lowest, or

**WE WILL REFUND YOUR MONEY**

Write us for our proposition, and we will give full details in first letter if you tell us all about your engine.



Price \$6 00 Each  
 Write for Prices on other Coils



50 Power Ave.

CLEVELAND, OHIO, U. S. A.

WE PAY THE EXPRESS charges East of the Mississippi River, or to the Mississippi on points beyond, on any of our goods when cash accompanies the order.

**Eighth Annual  
 BOSTON  
 Motor Boat and Engine Show**

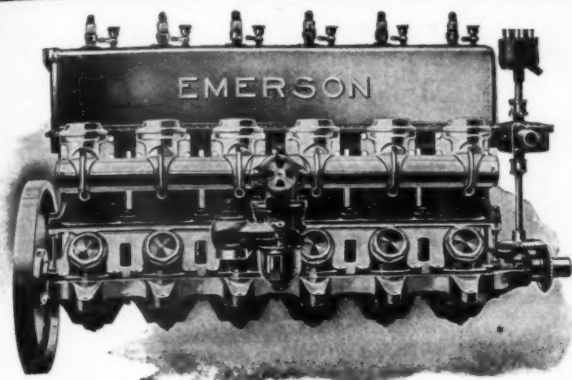
**Mechanics, Building, Boston  
 January 27th to February 4th, 1911**

- ☐ The greatest business-getting show in America.
- ☐ Draws from entire Atlantic Coast and rivers and lakes in New England.
- ☐ Applications for space now being received.

**Get In Early**

Address all communications and applications to  
**CHESTER I. CAMPBELL, Gen. Mgr.**  
 Executive Offices: 5 Park Square, Boston, Mass.





## TOO FAST FOR 'EM AT PEORIA

# 9

## STARTS FIRSTS RECORDS

The "Emerson," 26 ft., defeated every contestant in the 26 ft., 32 ft. and free for all classes, establishing a world's record for 26-footers in competition. Beating, each race, all records of Peoria Course of "Hoosier Boy," "Red Wing," "Red Top II.," "Scripps," "Mascot" and all others. Winner of every race against fastest boats of the West. Also defeated the Mississippi Valley champion Forty-footer with her eight-cylinder engine of triple the cylinder capacity. Winning 9 races in 2 days and maintaining an average speed of nearly 30 m. p. h. over rough water and with many turns without a miss or engine adjustment. The "Emerson" is a strong, seaworthy boat of good weight, carrying 2 heavy men and equipped with 6-cylinder, 300-lb. engine, and not a racing freak. Write for catalogue.

**THE EMERSON ENGINE CO., Inc.,**

**Alexandria, Va., U. S. A.**

## ESTABLISH A MODERN TAX-FREE ALCOHOL DISTILLERY

### We Have A Good Proposition For Motor Mfgs.

Having exported our Stills in large amounts for many years, and already having several far Eastern agencies, we are now open to establish additional agencies and invite correspondence to that end, looking after our old customers and prospective buyers by special successful demonstrative methods for making Alcohol, Apple Jack, Agnardicte, Mescal, Tequila, Peach Brandy, Whiskey, etc. Most modern and simple. All sizes, 5 to 500 gallons daily capacity distilling apparatus.

ARE YOU LOOKING FOR information relating to INDUSTRIAL or DENATURED ALCOHOL DISTILLING APPARATUS and the amazing possibilities of the utilization of waste farm products and wood waste by superheated steam distillation, the distilling apparatus as used by us; the principle involved, also the methods of chemical control and disposal of the product and by-products? We will gladly say to you:

Denatured Alcohol today is of the greatest untold benefit to the American motor people. It opens an absolutely new field for investment for progressive paper pulp and chemical fibre mills, paint, varnish, soap and candle makers, gardeners, farms and garbage plants, saw-mills, lumbermen and canneries. The Automobiles and the Navies of the world clamor for this new tax-free cheaper industrial alcohol. May we expect some encouragement from the more patriotic pioneers for this new American Industry? The field is new and profitable, and you can practically have the business your own way by starting now. We are makers of an apparatus for the production of this denatured or industrial alcohol; we build and install plants—large or small. The initial cost of a plant is small; the financial risk—if any—is trifling. The equipment is such that it can be added to at any time without disturbing the original installation. Address

**THE WOOD WASTE DISTILLERIES CO., Inc.**  
**WHEELING, W. VA., U. S. A.**



on board! It's the most compact socket and ratchet wrench set made and it only costs \$3. Fits 11 different sizes of nuts. Size just right for your tool roll. Price just right for your bill roll. Extra sockets any sizes desired, five on a ring for \$1. Send for circular.

Geo. A. Cutter, Sales Agt., Taunton, Mass.

**SINTZ**  
REVERSING PROPPELLER

**SIMPLE STRONG SPEEDY**  
**POSITIVE ACTION**  
**PERFECT CONTROL**

NEW YORK AGT.  
HAROLD W. BROWN  
Maritime Bldg.  
75 Broad St., New York, N. Y.

FIT FOR THE FITTEST  
WILMARTH & NORMAN CO.  
617 Canal Street  
GRAND RAPIDS, MICH.

**THE YANKEE MUFFLER**

Constructed of sheet steel, riveted seams, asbestos lined and galvanized. Water cooled for boats. Will operate successfully on a 2 or 4-cycle gasoline engine. NO BACK PRESSURE. ABSOLUTELY SILENT. Sizes: 3/4 to 1 1/2 H.P. Satisfaction guaranteed. Over 200,000 in use.

The YANKEE CO., Box "MB," Utica, N. Y.

**TANKS**  
JANNEY, STEINMETZ & CO. PHILA.

NEW YORK OFFICE: Hudson Terminal Bldg., 30 Church Street

**Caco Air Whistles**  
USE LESS AIR AND MAKE MORE NOISE THAN THE OTHERS  
Ask your dealer for a Caco!

Air Compressors, Tanks, Whistles and Fittings of all kinds for the Motor Boat

Send for our Marine Catalogue No. 51  
GLEASON-PETERS AIR PUMP CO. (Dept. A)  
255-263 CLASSON AVE., BROOKLYN, N. Y.

**Why? Why? Why?**  
Why be out of date? Why use out of date paint?  
Why scrub off the bottom of your boat?  
Why not take advantage of new ideas?  
Why not be up to date? Why not buy Bridgeport Bronze Paint and never have to haul or scrub off your boat "in the good old summer time?"

Bridgeport Bronze Marine Paint Co.  
Cable Address "Laoguero Bridgeport" Bridgeport, Conn.

**CANVAS for Winter Coverings for Boats. New and Second Hand.**  
**WM. E. THOMAS & CO.**  
42 South Street, NEW YORK CITY  
Telephone 1813 Broad

## Used Knock-Down Frames.

(Continued from page 74.)

Realizing that davits on a thirty-five footer would be practically impossible, the only way left was to lift her bodily on deck. This seemed awkward at first but as I have so far always had at least one companion it has not caused us any inconvenience.

To secure her on deck I laid her fore and aft, a little to starboard, as my wheel is on the port side, and taking two pieces of one by three inch oak, six inches longer than her beam a foot from the bow and stern, capsized her on them and marked these pieces so I could slot them in an inch and a half where the gunwales rested. Securing them to the top of the cabin they made a strong and light pair of chocks, and a first class bed for her to rest on. Two pieces on half inch line fastened to a ring on one side and long enough to seize in a ring on the other side of the chocks, parcelled with canvas where they chafed the keel and bilges, made excellent gripes that would hold her in the hardest blow and were easily released when I wanted to launch her.

HARRY J. HUNTER, Newark, N. J.

## Mr. Fauber's Comments on Pioneer.

(Continued from page 46.)

Pierette, owned by Lord Howard de Walden, is the same lines as Columbine, and has been piloted this season by the well-known sportsman A. G. Fentiman, who says that "she handles to perfection—is a dry boat on rough water, and the prettiest and most satisfactory boat he has ever had to do with."

Pioneer shows up pretty well the advantages of the hydroplane principle: with four-fifths the weight of Ursula and one-half the horsepower she is faster than Ursula.

Fauber type hydroplanes not only have stability, but they are so much superior in every other respect that the ordinary displacement boat has come to the end of its days as a racer and for certain uses as a speed launch.

A new branch in the industry has been born that will revolutionize high speed boats.

I enclose an extract of my recent letter to the British Motor Boat.

Yours truly,

W. H. FAUBER.

The capsizing of the 40-foot hydroplane Pioneer, built for the Duke of Westminster, on the first day of her trials, is easily accounted for, and I think my explanation will throw light on the more or less mysterious performance of certain other single-screw boats of high power that have apparently shown a want of stability at times. The difficulty, as I understand, is usually attributed to the natural torque of the propeller, but I find this is not so, but that the capsizing effort is caused by a side thrust and lift of the propeller, which happens under certain conditions, producing a momentary effort of extraordinary force. The capsizing of the racer Standard on the Hudson in 1909, and the so-called sensitive stability of Dixie II, on the rough waters at Monaco, were undoubtedly due to the same reason. \* \* \*

The explanation is very simple. The sudden increase of power caused the propeller to turn rapidly and throw astern such a quantity of water that an air funnel was formed in front of the upper blades of the propeller. The lower blades, engaging solid water under the full power of the motor, would cause a side thrust to port on the propeller shaft bearing of approximately 2,000 pounds. As this side thrust was applied about 2 feet below the centre of the stern displacement, it inclined the hull to starboard. Mr. Robins, having just given the boat a starboard helm, thought that this was the cause of the mysterious inclination and threw the rudder in the opposite direction, thus adding a few thousand pounds more to the momentary side thrust of the propeller.

As the inclination of the hull to starboard increased, the side thrust became a vertical lift, and no stability possible in a 40-foot hull could resist the capsizing effort of the propeller and rudder combined. \* \* \*

**ROWBOATS \$20 UP**

20 DIFFERENT DESIGNS  
Can ship immediately in any quantity. Need No Boat House. Never Leak. Rust. Check, Crack or Rot. Every boat has water-tight compartment, so cannot sink. Demonstrator Agents Wanted in Every Community. Write for Free Illustrated Catalog and Special Prices. Michigan Steel Boat Co. 294 Bellevue Ave., Detroit, Mich.

**HUDSON YACHT & BOAT CO. NYACK, N. Y.**

Have your naval architect submit plans and specifications to us, or we will submit plans and specifications to you. We build and repair boats. Tel. 362

"Members National Association of Engine and Boat Manufacturers"

**THERMOS THE BOTTLE**

Write for free illustrated catalogue  
American Thermos Bottle Co., New York

**LISK MARINE ENGINES**  
4 CYCLE ONLY  
1 to 6 Cylinders. 5 to 40 H. P.  
Manufactured by  
**GEO. A. LISK**  
1190 West Jefferson Avenue, Detroit, Mich.

**STANLEY MARINE MOTOR**  
High in Quality Low in Price  
**THE STANLEY CO.**  
79 MILK STREET BOSTON, MASS.  
Send for Catalog

**ACCESSORIES**  
Electric Whistles, Searchlights and Dynamos. Install Our O'Brien Electric Whistles on your motor boat that PASSENGER GOVERNMENT INSPECTION Load, durable. Easy to put on. Run on a few dry batteries or storage battery. Price \$2.75 with 25 feet of wire and push button. Send for catalogue anyway.

**THE EDGAR MFG. CO.**  
104-D Hanover St. Boston, Mass., U.S.A.

**SEAGOING GURNET DORIES CLIPPER LAUNCHES**  
18 1/2 to 30 feet  
NOISELESS, ODORLESS EXHAUST, ESPECIALLY ADAPTED FOR YACHT TENDERS AND THE WATERS OF THE ATLANTIC COAST OR LARGE INLAND LAKES. CATALOG D 4  
TO ENABLE SATISFACTORY REPLY, PLEASE STATE REQUIREMENTS.  
**THE ATLANTIC COMPANY, AMESBURY, MASS.**

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Boat Manufacturers  
Write for Catalog

**WAREHAM, MASSACHUSETTS**  
**BUILD YOUR OWN BOAT**

Buy a frame, do the work yourself from our patterns and instructions and save three-fourths the cost. Hire local carpenters and save at least half the cost of the same boat if purchased at any yard or factory. Our designs are the best.

Send for our catalog which tells you all about it  
**De FOE BOAT & MOTOR WORKS**  
2323 South St. Bay City, Mich.

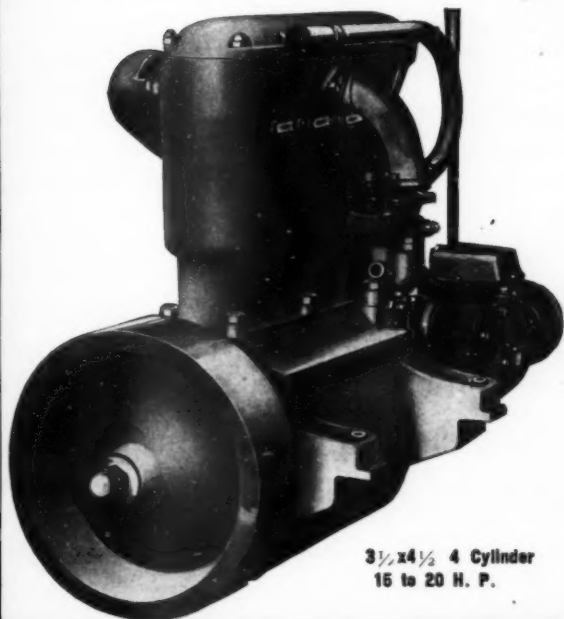
**W. H. LINDLEY CO., Canastota, N. Y.**

**STA-RITE**  
Spark plugs have "stayed right the longest" and are repaired free.  
Double Porcelain—best for boats.  
Price \$1.00  
**The R. E. HARDY COMPANY**  
1735 Michigan Ave., Chicago



# REYNOLDS

## ROTARY VALVE MOTORS



3 1/2 x 4 1/2 4 Cylinder  
15 to 20 H. P.

The motor in your boat should be as *reliable* and *quiet* as the motor in a fine automobile.

Here is a short cut to the real joy of motor boating—compact, quiet, clean of line—an absolutely dependable 4 cycle motor, with all the simplicity of two cycle design—and at a very reasonable price.

Let us tell you about it.

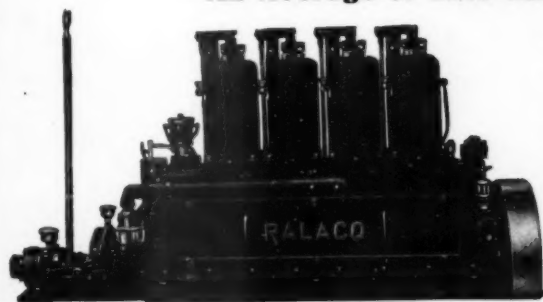
**REYNOLDS MOTOR COMPANY**  
**DETROIT**

MOTOR BOATING

## A NEW WOLD'S RECORD FOR LONG DISTANCE OCEAN RACING

LIMIT in the KETCHIKAN, ALASKA to VANCOUVER, B. C., RACE, equipped with

**Made 618 Miles in 57 Hours 56 Minutes**  
**—An Average of 10:65 Miles Per Hour**



The 2-30 H. P. Engines in the LIMIT have been in constant use for three years **and they cost no more** in the long run than inferior machines whose first cost is less.

**RALACO**  
THE SILENT ENGINE  
THE SIMPLIFIED ENGINE

### THE S. M. JONES COMPANY

Main Office and Factory,	-	-	-	616 Segur Ave., Toledo, O.
New York Office,	-	-	-	136 Liberty St.
Philadelphia Office,	-	-	-	The Bourse

## THE IDEAL HOUSEBOAT FOR A WINTER IN FLORIDA

### The Speedy Shoal Houseboat "COCOPOMELO"

JUST COMPLETED

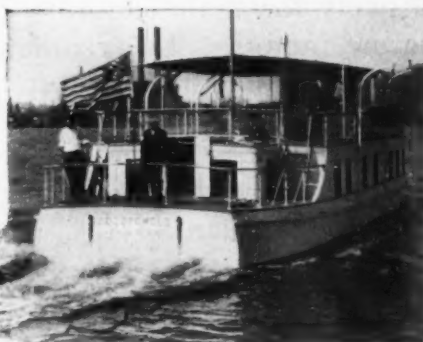
She is 70 feet long, 19 feet beam with a draft of 18 inches—conveniently operated in very shallow waters. Driven by two 25 H. P. engines, which develop an average speed of 9 1/2 miles. An example of our own design and construction which we can duplicate for use this winter. Cruisers and houseboats of 60 to 100 feet length a specialty. Orders should be placed now to insure delivery.

We build from architect's plans.  
Write us to-day about your needs.

**Mathis Yacht Building Co.**

**COOPER'S POINT**  
**CAMDEN, N. J.**

Builders of the "Caliph"—Winner  
of the Havana-Phila. Race



# We Move Into Our New Plant November 1st

## GRAY MOTOR CO.

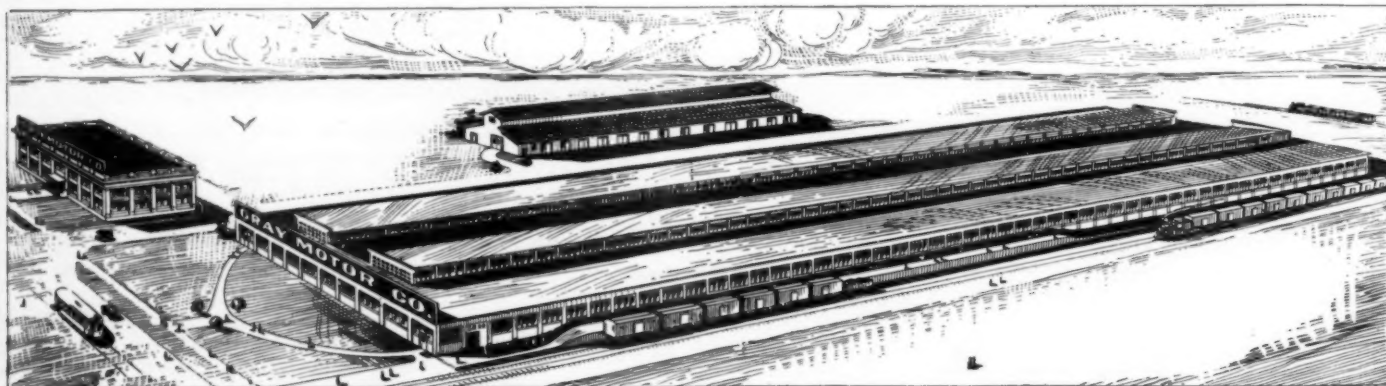


Our Present Plant.

*This modern plant, the small building of which was built in 1907 and the larger building in 1908; new, up-to-date; the largest plant in the world devoted exclusively to the manufacture of two-cycle marine motors, has already proven too small for the enormous growth of the Gray Motor Company, and being unable to fill the demand for Gray Motors has made a new plant absolutely necessary.*

The Gray Motor Company having become a constituent plant of the United States Motor Company with a capital of \$30,000,000 it is the intention to make this the largest marine and stationary gas engine manufactory concern in the world.

With this big corporation behind the Gray Motor Co., the user can feel sure of the latest developments in engineering practice, the highest grade of machine work and have an assurance of permanency, and substantial backing.



A rough drawing of our New Plant. Actual Photos of same in our next Advertisement.

We needed room to grow, besides room to do business in. Our new plant is built for the future as well as for the present with acres of vacant property to grow into. The office building is 60 x 80 ft.

The manufacturing main plant is 150 x 1000 ft. The first 500 ft. will be used exclusively for manufacturing Gray two-cycle marine motors. The remaining 500 ft. will be used for manufacturing stationary motors.

This plant is fire proof, concrete and steel construction with a railroad siding the entire length of the plant.

The testing room is 40 x 300 ft. In spite of the big capacity of our present plant we

were 500 to 800 motors behind every day last spring — an entirely unexpected situation on our part and a very unsatisfactory one to our customers. This will not happen again for now we have room to build five times as many motors, building them in the dull season and warehousing them for the busy season.

This new plant is located on Oakland Avenue, just inside the city limits on a 22 acre tract purchased by the United States Motor Co. for the location of their Detroit group of manufacturing plants. On this tract will be located the Gray Motor Company, the Brush Runabout Co., manufacturers of automobiles; the Alden-Sampson Company, manufacturers of motor trucks, and the Briscoe Mfg. Co., manufacturers of automobile parts.

When writing to advertisers please mention MOTOR BOATING, the National Magazine of Motor Boating.



# Your Opportunity to buy a Gray Motor at a Special Price

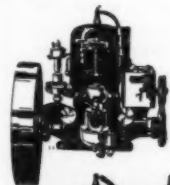
It is eight miles from our present factory to the new plant, and it will require fifty freight cars to move us.

We have to haul our present outfit three blocks; load it on freight cars, switch it around the city 8 miles and shove it onto the sliding alongside of our new plant and unload it.

To save as much of this moving as possible we have decided to offer 1000 (or 12 car loads) of the 1911 motors we now have in stock at a special price, provided we can ship them from our old plant and not be to the expense of moving them.

This is a splendid opportunity to buy your 1911 Gray Motor for next spring; to be sure you are going to get it; to get it at a low price, and to buy from a concern whose guarantee is absolutely good.

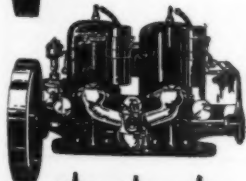
In order to be sure to have in stock motors for spring when the demand is on for them, we began manufacturing our 1911 line September 1st, and by January 1st of next year we will have 3000 motors all machined and ready for delivery, and our new factory producing motors at 1000 to 1200 per month.



6 H. P.—power, workmanship and material absolutely guaranteed by a responsible concern. Ready to install in your boat COMPLETE

\$94 to \$118

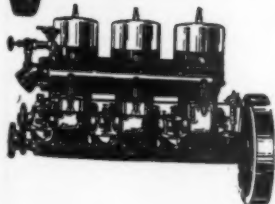
depending upon outfit



12 H. P.—Guaranteed to develop 14 to 16 H. P. Complete outfit, ready to install in your boat

\$198 to \$237

depending upon outfit



21 and 36 H. P. Model T

Write for Special Literature

*Write for*

*Special Moving Sale Prices*

*Good only for*

*30 Days*

## GRAY MOTOR CO.

931 LIEB ST.,

DETROIT, MICH.

CANADIAN GRAY MOTORS CO., Ltd., 53 River Front, Walkerville, Ont.

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### TRIMOUNT ROTARY WHISTLE BLOWER and WHISTLE

#### A ROTARY BLOWER

DRIVEN BY FRICTION with engine fly-wheel. Maintains a steady, strong blow, heard for miles.

**NO TANKS—NO TROUBLE—NO DANGER**  
Replaces the compressed air system which is never dependable.

If desired, place whistle 15 to 25 feet from BLOWER—connect by rubber hose—and the full, rich tone is still maintained.

Uncle Sam's Lifeboats use the TRIMOUNT. Made entirely of BRONZE metal.



TRIMOUNT ROTARY POWER CO.  
144-152 PEARL STREET  
BOSTON, MASS.

**HAND BILGE PUMP**  
Capacity 10 gals. per minute at 15 R. P. M. Every bit of it bronze metal. Nothing to break or get out of order. Your life-time friend. It's yours for \$20.

**DURABLE  
DEPENDABLE  
DE LUXE**

Only \$15 and up



### THE HYDE TURBINE TYPE PROPELLERS

are designed to develop the highest speed, and

are made of Manganese Bronze with a reputation.

**"IF YOU WANT THE  
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Ask for prices

**HYDE WINDLASS COMPANY, BATH, ME.**

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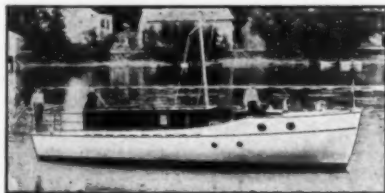
BECAUSE

Every frame is set up in the shop and each piece fitted by experienced men, insuring to the builder a perfectly designed and well balanced boat.

This natty cruiser was built by an amateur.

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It is free and tells how you can have your boat without paying fancy prices.



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### This Free Book Tells All About Electric Light for Motor Boats

Send today for this free book, and study up on the question of how to fit up your motor boat for next season with a complete electric lighting outfit at small expense. The most complete book of the kind ever printed. If you had trouble with oil lamps last season, you surely should read this book. Sit down and write for it today.

**DAYTON ELECTRICAL MFG. CO.**

Largest Manufacturers of Ignition Apparatus in the U. S.

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## ROPER Safety Propeller

#### FOR CRUISING AND TROLLING

The fisherman can control his boat to the instant, from start to stop, from slow, silent drift to fullest speed, all with one hand and while handling his rod with the other.

Absolute One-Lever Control of Speed in either direction entirely without engine racing, throttle or spark adjustment, and without change in engine speed or direction of rotation of propeller shaft.

Roper Safety Shear Coupling, Leverage, governing shearing of pin, adjustable to meet the strength requirement of engines of various powers.

Write for details of Roper Equipment for your Motor Boat.

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The "equivalent" or substitute for sunlight is brighter and more pleasant than electricity and cheaper than oil, is suitable for big boats and little boats, for power boats and sailing craft. Has the sanction of the National Fire Underwriters and the U. S. Steamboat Inspection Service; is used in the boats of the U. S. Revenue Cutter Service, the Coast and Geodetic Survey, the Department of Commerce and Labor, and by hundreds of the most prominent yachtsmen in the country. Our catalogue tells the advantages of the commercial acetylene over all other forms of boat-lighting. Drop a postal for a catalogue—now.

**THE COMMERCIAL ACETYLENE CO.  
EIGHTY BROADWAY - NEW YORK CITY**

### Special Reduced Prices Until Dec. 1st, 1910

Send for Our Catalog Now



Take advantage of this offer and start building a boat this Fall.

**On all orders for  
our boats, received  
by us before Dec.  
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**make a special extra deduction of 10 per cent.**

You save one dollar on every ten. The fall and winter is the best time to build a boat, because you can turn the long evenings and unpleasant days into a profitable employment. It is a fascinating and easy job. \$3,000 men and boys have successfully built boats by the Brooks system.

Our guarantee means just what it says—your money back if you are not satisfied. Be sure and send for our catalog. It shows the common sense way, the economical way to build a boat, and you should know about it.

Ask for catalog No. 24.

**Brooks Manufacturing Company**

510 East Avenue

Saginaw, Mich.

### FOR SOUTHERN WATERS



**THE WEST MYSTIC BOAT COMPANY  
WEST MYSTIC, CONN.**



Yacht Brokerage  
**STEARNS & McKAY CO.,**  
MARBLEHEAD, MASS.  
DESIGNERS BUILDERS



## 25-35 Foot Service Launches

**COST MODERATE**  
**Serviceable**  
**Strong**  
**Seaworthy**  
**and Always Reliable**

### BARGAINS

43' L. O. A. x 42' x 8' x 3' draught. 45 H. P., 6 cyl. motor, absolutely first class in every respect. Fast, able, very comfortable below decks. Fully equipped. Bridge and cockpit control. Price low.

L. O. A. 66' 3" x 66' 1" x 13' 6" x 5' draught. 60 H. P., 6 cyl. motor, 2 large staterooms, sleeps 7 besides crew. Equal in every respect to the finest steam yachts. Very commodious and fully equipped for perfect comfort and safety. Very handsome and richly furnished.

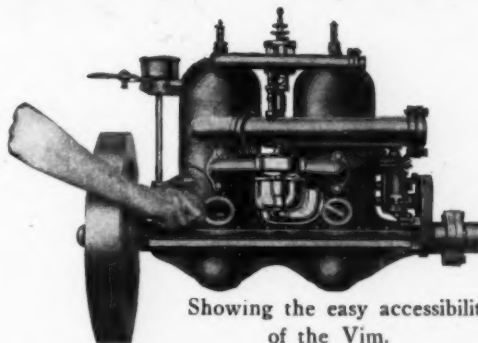
33' cruising launch \$1500. 55-foot steam launch \$1500. 25-foot w. l. cruising knockabout \$850. 40-foot w. l. Schooner \$2800. And many others.

**Marblehead Green—**  
**Absolutely Anti-Fouling**

**STEARNS & McKAY CO., Manufacturers**

MARBLEHEAD, MASS.

## Why Every Vim Owner Is a Vim Enthusiast



Showing the easy accessibility  
of the Vim.

Medium Speed Sizes.  
1 cylinder—5 and 9 H. P.  
2 cylinder—10 and 18 H. P.  
3 cylinder—15 and 22 H. P.  
4 cylinder—20 and 36 H. P.

Heavy Duty Sizes.  
1 cylinder—3½ and 6 H. P.  
2 cylinder—12 H. P.  
3 cylinder—18 H. P.

### VIM MOTOR

#### The Most Perfect Two-Cycle Motor Made

A motor's behavior and service in the owner's boat are the only standards by which it can be judged.

Has it given service free from trouble and excessive repairs?

Has it proved itself capable and worthy under conditions unfavorable as well as favorable?

Has it responded to the unusual demands which inevitably come?

Is it economical of gasoline?

These and many other questions will present themselves when you come to choose the best motor for your boat. We will let enthusiastic Vim owners answer them for you.

In the four years that Fred Wagner, of Sandusky, Ohio, has been running two 5 H. P. Vims in his boats they haven't given him a particle of trouble—and he says he has been out in all weathers.

Henry Schlesselman, of Kelley's Island, Ohio, hasn't spent a penny for repairs on his Vim in three years; and says he hasn't experienced fifteen minutes of trouble in all that time.

E. C. Schultz, of Zanesville, Ohio, has a Vim rated at 5 H. P. He tells us it actually delivers more than 6 H. P., and uses less gasoline than the 3½ H. P. engine he formerly owned.

James F. Flynn, of Sandusky, Ohio, hasn't had his Vim overhauled in three years, yet it is in perfect condition. A cruiser fitted with a 36 H. P. Vim voyaged from Bath, Me., to New York on 180 gallons of gasoline. Equipped with a 25 H. P. engine of another make, the same boat, under like conditions and over the same route, required 550 gallons of fuel.

These are matter-of-course performances; we could cite hundreds like them had we the space to do so.

There isn't a Vim owner who isn't a fast friend of the Vim; who isn't preaching Vim to his cronies—because of such work as this.

The reason is no mystery—Vim staunchness and strength; Vim power and reliability—and simplicity. You will be doing yourself a real favor by writing for the Vim book.

### The Vim Motor Manufacturing Company

440 Market Street SANDUSKY, OHIO

Representatives:  
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OTTO GAS ENGINE WORKS,  
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W. S. CARMAN, Bourse Bldg.  
Montreal, Ont.,  
I. L. LaFLEUR, Ltd.  
Portland, Ore.,  
GAS POWER & SUPPLY CO.

# BUFFALO

## MARINE ENGINES

### A NEW "SIX" 4¾"x 5" 40 H.P. at 800 R. P. M.

Because a lot of people have called upon us for it, and because we want their business, we have determined to produce an addition to our already wide range of twenty-two models, in the shape of a six-cylinder speed engine of the Auto-Marine type. It will be ready for early spring delivery. If we can get more expert mechanics for our overtime shifts we will try to have a limited few ready shortly after January 1, 1911.

The design and construction features of the new six have been thoroughly proven in the 1910 success of our 4-cylinder, 25 H. P. Auto-Marine. Except for minor refinements, the new 6-cylinder Auto-Marine will practically be the present 25 H. P. Auto-Marine with two added cylinders.

The new six, with a bore of 4¾ inches and a 5-inch stroke, will be rated at 40 H. P. at 800 R. P. M.—which is the usual BUFFALO under-rating. Cylinders, in pairs, with the regular BUFFALO practice of integral water jackets and water-jacketed exhaust. Gear driven Bosch magneto with double ignition, Schebler carburetor, centrifugal circulating pump, aluminum base, and reverse gear built in as a rigid part of the engine proper, with the special BUFFALO racing clutch in which a positive jaw-locking device is used.

Positive force-feed lubrication throughout, with BUFFALO ring oilers on the crank pins, and an oil pump that maintains an automatic return feed from the base to the mechanical lubricator bracketed on the after cylinders—a constant and effective circulatory oiling system.

Already orders have been received for the new six—two from Italy, one from "Hoosier Boy" Whitlock, one from Finland and two from Toronto. If it's the engine for your hull, won't you please file your order right away quick? As you know, we've worked the BUFFALO plant day and night and are still working on 1910 orders. We don't want to disappoint you on delivery any more than you want to be disappointed, but we won't resort to rush work on BUFFALOES or use short-cut construction methods to satisfy anybody. Wherefore, for your sake and our sake, won't you give us all the time on your order you possibly can **before the season opens**? Thank you.

Eleven of the twenty-two BUFFALO models are of the Regular Type; seven are Heavy Duties, and there are five speed engines. We'd be glad to send you our catalog.

*"The Engine of Constant Service"*  
**BUFFALO GASOLINE MOTOR CO.**

1204-16 Niagara St., Buffalo, N. Y.



## LAMB in NAME but a LION in STRENGTH

One of the great vantage points of the Lamb Engine is its strength and power—this with the quality and fineness of its construction and design makes the ideal motor for your boat.

All Up-to-Date	FEATURES			MEDIUM DUTY		HEAVY DUTY		Sizes, 4 Cycle Engines
	Accessible	Medium Speed		2 Cylinder 12 H. P.		3 Cylinder 30 H. P.		
	Quiet	Medium Weight		3 Cylinder 18 H. P.		4 Cylinder 40 H. P.		
	Clean	Heavy Weight		4 Cylinder 24 H. P.		6 Cylinder 60 H. P.		
	Flexible in Control	Long Life		6 Cylinder 40 H. P.				
	Equipment the Best							

SPECIAL RACING ENGINES TO ORDER, ONLY,  
IN 4, 5, 8 and 12 CYLINDERS

Prices Right.

Send for Catalogue.

**LAMB BOAT & ENGINE CO.**

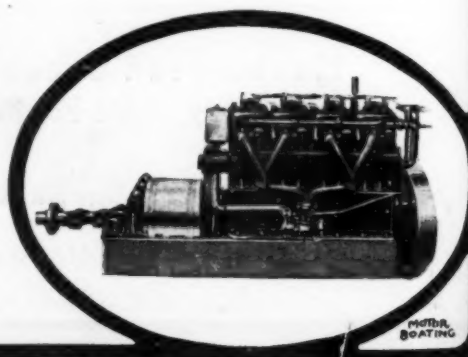
DEPARTMENT "M"

Clinton

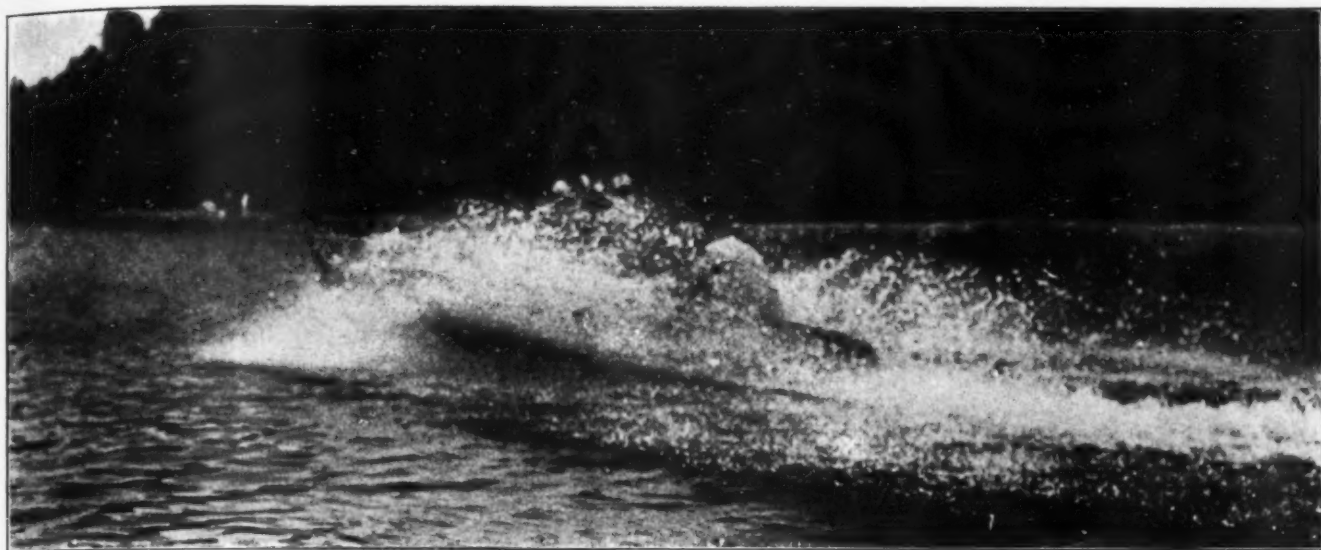
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Members N. A. E. & B. M.

LAMB ENGINE CO., of New York, Department M, 30 Church Street  
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THE ELBRIDGE V MAKING 36 MILES AN HOUR

## ANOTHER VICTORY FOR ELBRIDGE ENGINES

The race for the speed Championship of the Great Lakes run at Buffalo on Labor Day was won by the Elbridge V.

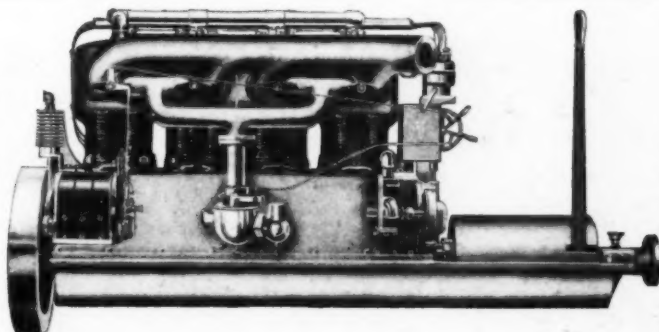
This remarkable 22 ft. boat, equipped with an Elbridge Feather-weight Engine made the 25 miles of the course without a skip of the motor.

Whether you want to equip a boat for speed, pleasure or business, Elbridge Engines will deliver the power for you.

*Write for FREE Catalogue.*

ELBRIDGE ENGINE COMPANY  
DEPT. M ROCHESTER, New York

# SCRIPPS MOTORS



# 1911 MODELS

### THE LAST WORD OF REFINEMENT

Scripps Motors have always represented the highest type of motor refinement possible. It has justified the infinite care we expend on it in process of construction by its performance in hundreds of races and test performances. Our experimental department has been working for months on our new 1911 models, and their few changes represent fuller refinement, rather than radical change.

**Extended Crank Case**—New Scripps models will be built with an extended crank case, with reverse gear built in as integral part of the motor.

### WATER JACKETED EXHAUST

The exhaust manifold will be water jacketed, and by our peculiar construction this feature will be achieved without adding to the weight of the engine.

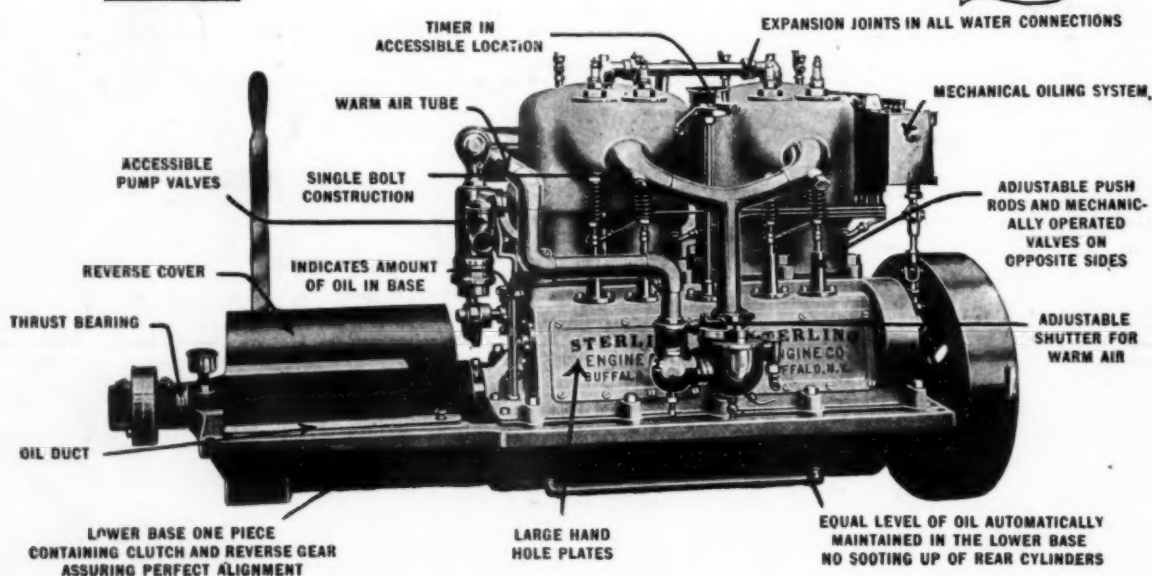
### DOUBLE IGNITION SYSTEM

The motor will be fitted with two independent ignition systems, with Bosch magneto, completely wired on the motor, and ready to install in the boat. Every Scripps motor will reach you in perfect condition, ready to set into your hull, connect up with the propeller shaft, and start.

These new features will be found in the entire line of Scripps Motors, from 1 to 6 cylinders, 4 to 100 H. P. Complete information on request.

SCRIPPS MOTOR CO., 651 Lincoln Ave., DETROIT, MICHIGAN

# STERLING ENGINES



1911—MODELS NOW READY FOR SHIPMENT—1911  
THE MARINE ENGINE OF QUALITY

You will find Sterling engines for 1911 the most up-to-date marine engines built, which fact you will be convinced of if you will take the time to investigate them.

It is bad business to buy an engine, regardless of the name, make or record. For if there is any place where QUALITY counts, it is in a marine engine, from which so much is expected. We are constantly, almost daily, receiving letters from users of Sterling engines, in which they openly express themselves as being in every way satisfied; men of experience write that they have owned other well known makes of engines, but that the Sterling is way ahead of them all; we will be glad to show you these letters or send you copies upon receipt of your request.

Constant improvement, both in design and construction,

have made the Sterling the most reliable and durable marine engine built. Mechanical lubrication, and adjusting nuts on push rods are among our latest improvements, which with ample water jackets, water-jacketed exhaust manifold, and mechanically operated valves, provide high efficiency. The accompanying half-tone shows at a glance a number of exclusive Sterling features.

These engines are built for all marine requirements—they are solely for marine purposes—and come in sizes from 8 to 240 H.P., two, four, six and eight cylinders, four cycle. From the range of sizes offered (see catalog), you should have no trouble in selecting an engine to propel your launch, cruiser, speed or work boat, or better still, send us your requirements and we will recommend our most suitable size and type, and also send literature.

## STERLING ENGINE CO.

1254 NIAGARA STREET,

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BUFFALO, N. Y., U.S.A.



